Replacement Sheet
Sheet 1 of 45
Appl. No. 09/545,608; Filed: Apr 7, 2000
Dkt No. 2222.0400001; Group Unit: 2141
Inventors: HOHMANN et al.
Tel. No.: 202-371-2600
For: An Intellectual Asset Protocol for Defining Data Exchange Rules and Formats for Universal Intellectual Asset Documents, and .....

OIPE
APR 27 2005
PATENT & TRADEMARK OFFICE

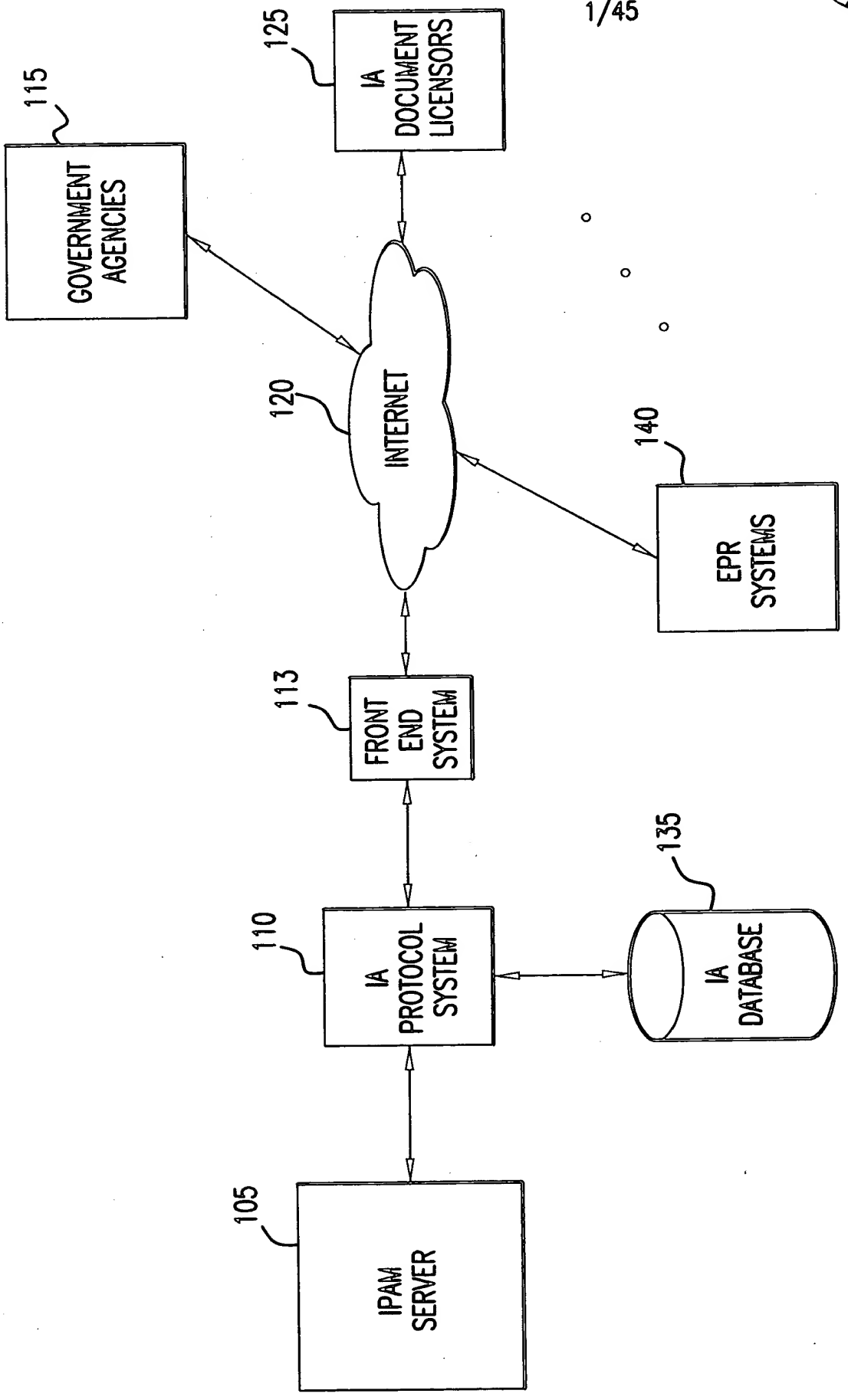

FIG. 1

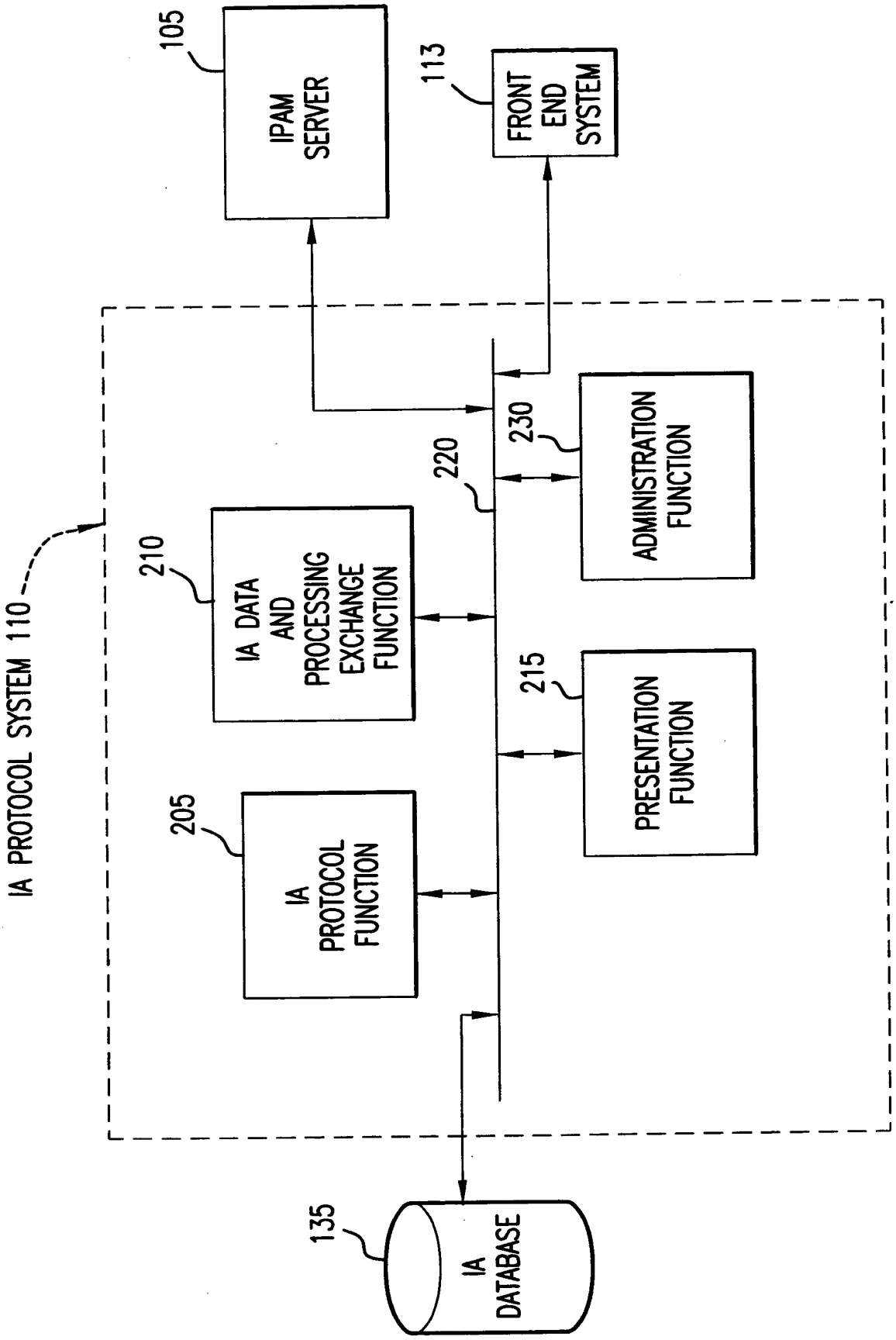
105
IPAM SERVER
113
FRONT END SYSTEM
IA PROTOCOL SYSTEM 110
220
230
ADMINISTRATION FUNCTION
210
IA DATA AND PROCESSING EXCHANGE FUNCTION
215
PRESENTATION FUNCTION
205
IA PROTOCOL FUNCTION
135
IA DATABASE

FIG.2

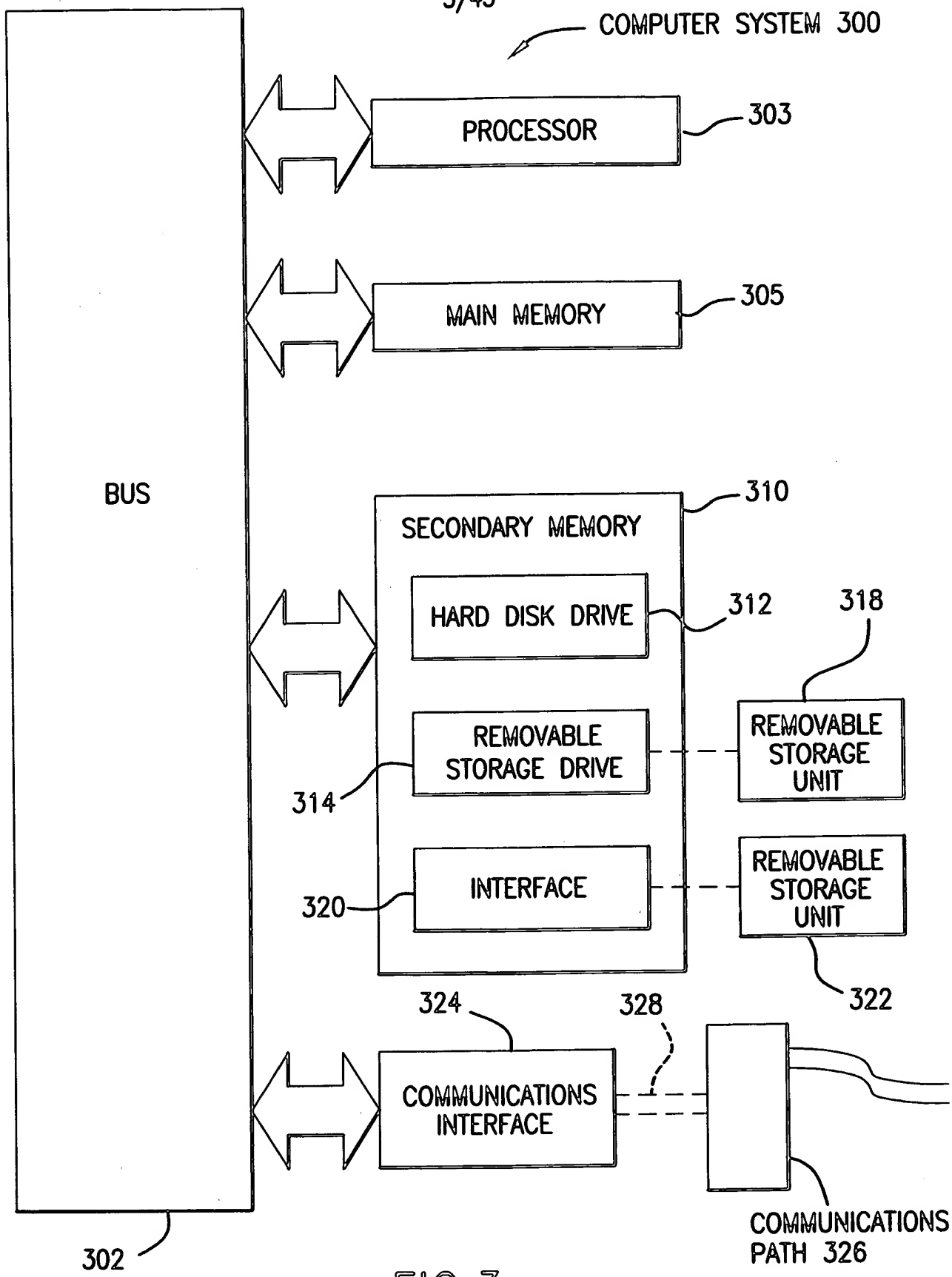
COMPUTER SYSTEM 300
PROCESSOR
303
MAIN MEMORY
305
BUS
310
SECONDARY MEMORY
HARD DISK DRIVE
312
318
REMOVABLE STORAGE DRIVE
314
REMOVABLE STORAGE UNIT
INTERFACE
320
REMOVABLE STORAGE UNIT
322
324
328
COMMUNICATIONS INTERFACE
COMMUNICATIONS PATH 326
302

FIG.3

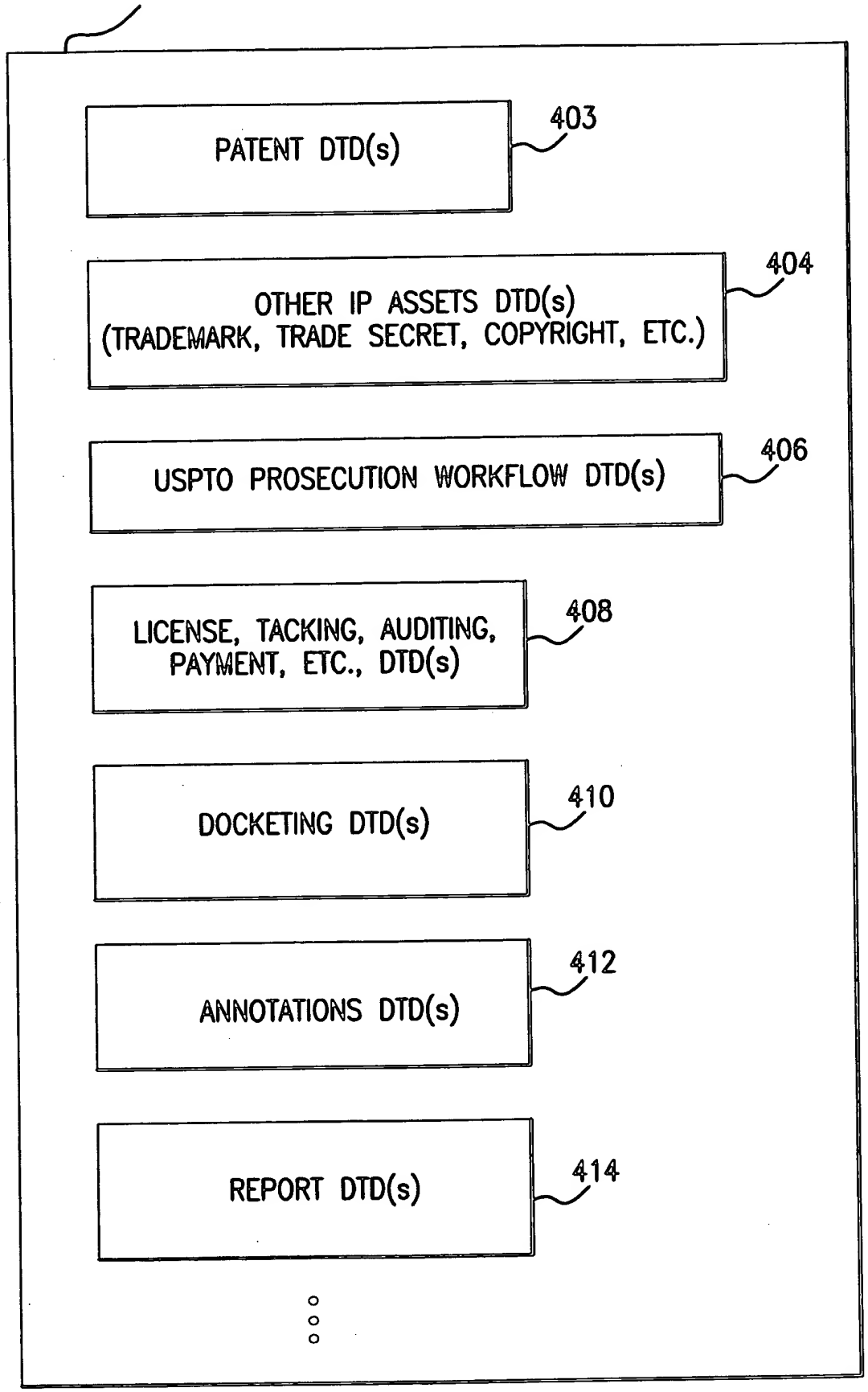
COMPREHENSIVE PATENT MARKUP LANGUAGE DTD 402
PATENT DTD(s)
403
OTHER IP ASSETS DTD(s) (TRADEMARK, TRADE SECRET, COPYRIGHT, ETC.)
404
USPTO PROSECUTION WORKFLOW DTD(s)
406
LICENSE, TACKING, AUDITING, PAYMENT, ETC., DTD(s)
408
DOCKETING DTD(s)
410
ANNOTATIONS DTD(s)
412
REPORT DTD(s)
414

FIG. 4

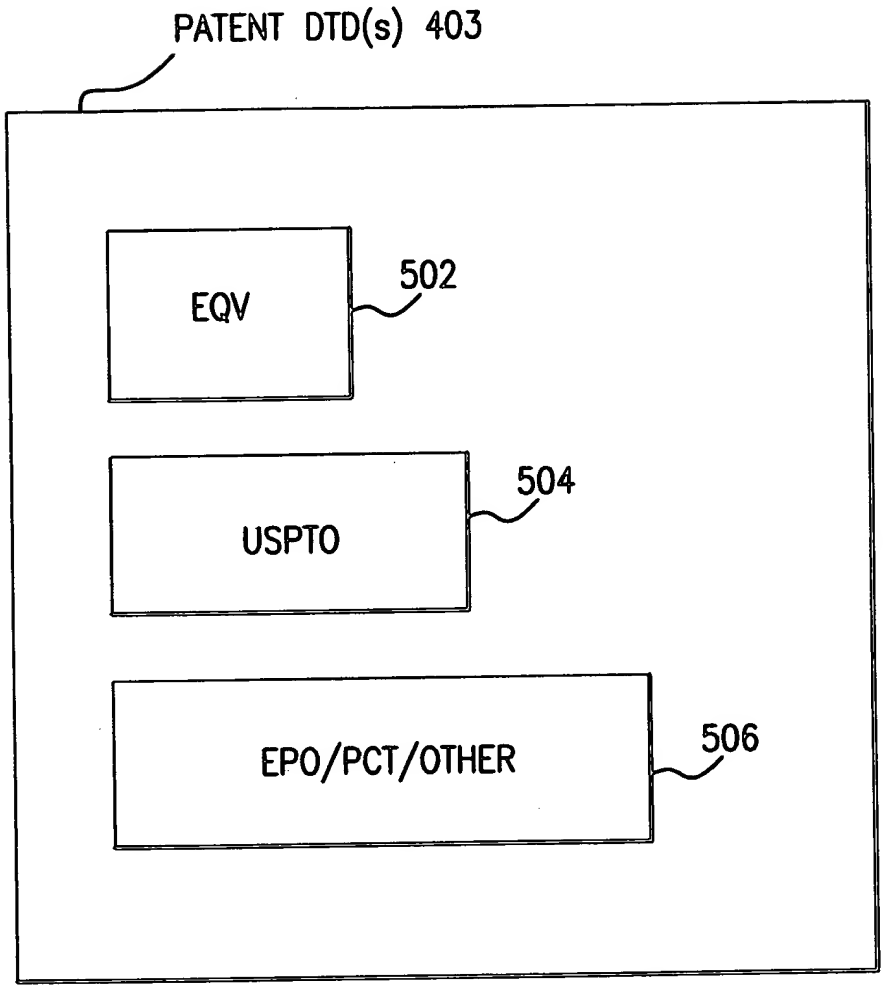
PATENT DTD(s) 403
EQV
502
USPTO
504
EPO/PCT/OTHER
506

FIG.5

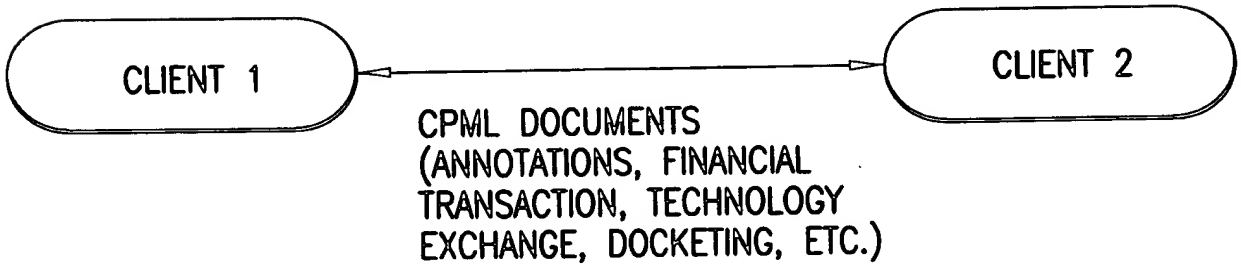
CLIENT 1
CLIENT 2
CPML DOCUMENTS (ANNOTATIONS, FINANCIAL TRANSACTION, TECHNOLOGY EXCHANGE, DOCKETING, ETC.)

FIG.6

Replacement Sheet
Sheet 6 of 45
Appl. No. 09/545,608; Filed: Apr 7, 2000
Dkt No. 2222.0400001; Group Unit: 2141
Inventors: HOHMANN et al.
Tel. No.: 202-371-2600
For: An Intellectual Asset Protocol for Defining Data Exchange Rules and Formats for Universal Intellectual Asset Documents, and .....


```
<!--
  APML version 0.1
  Author: Matt Schnitz

  The goal of v0.1 to include text structure and all bibliographic tags
  present in the IPAM v6.0 database and indexes.
-->
<!--
  Definition of the Patent DOCTYPE tag.

  The gross structure of an APML document:
  -Patent
   -Identity
   -Bibliography
   -Description et al
   -Claims

  Normalizations
  -GUID's always obey the Aurigin GUID convention
-->
<!ELEMENT Patent      (Bibliography,
                       Abstract,
          UnstructuredBibiliography?,
            BriefSummaryOfInvention?,
              DescriptionOfDrawings?,
              DescriptionOfInvention,
                       Claims)   >
<!ATTLIST Patent
              MajorVer ( 0 | 1 | 2 | 3 | 4 | 5 | 6
                  | 7 | 8 | 9 ) #REQUIRED
              MinorVer ( 0 | 1 | 2 | 3 | 4 | 5 | 6
                  | 7 | 8 | 9 ) #REQUIRED
              GUID ID #REQUIRED
<!--
  Normalized tags
  This DTD has a common set of tags that appear in many
  places. These "normalized tags" promise a given data
  normalization when they appear.

  -Date's are always of the form YYYYMMDD.
  -PubOrg's are only allowed to be those found
    in WIPO Standard 3
  -Kind's obey the Aurigin Naming Convention
  -Num's are always purely numeric
  -Cntry's are only allowed to be
    ISO-specified countries
-->
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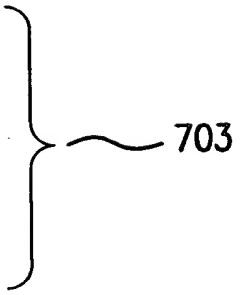

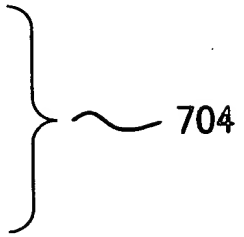

FIG.7A

```
<!ELEMENT Date     (#PCDATA)>
<!ELEMENT PubOrg   (#PCDATA)>
<!ELEMENT Kind     (#PCDATA)>
<!ELEMENT Num      (#PCDATA)>
<!ELEMENT Cntry    (#PCDATA)>
```

705

```
<!--
   Common tags and entities
   (i.e. tags that appear in more than one place but are not normalized)

   TODO: What else should appear in the common text?
         Bold? Superscript?
-->
<!ENTITY %commontext "(#PCDATA)">
<!ELEMENT P %commontext;>
<!ATTLIST P id ID #REQUIRED>
```

706

```
<!--
   Bibliography tags

   Despite the fact that it is inappropriate to arrange them like
   this in actual documents, I've arranged the bibliographic tags
   into areas in here for convenience.

   -Identifiers
   -References to Other Documents
   -Legalities (i.e. data that reinforces the
    assignee's right to monopoly)
   -Classifications
   -Misc.

   They may have further decomposition.
-->
<!ELEMENT Bibliography (
    Title, PubNo, AppNo,

    PatentRef*,

    FilingDate, IssueDate?, PublicationDate?,
    CalculatedExpirationDate?, Assignee*, Inventor*,
    Priority*, DesignatedStates,

    IPC*, USClassification*,

    PublicationLanguage, NumClaims?, NumDrawingPages?,
    NumFigures?,

    NumSpecPages?
)>
```

707

FIG.7B

```
<! --
|  Bibliography: Identifiers
|  -AppNo is currently unnormalized, and with good
|   reason. There are hundreds of different
|   application number formats.
-->
<! --
  This "xml:space" thing is a trick to make
  the XML parser preserve the whitespace of the tag.

-->
<!ELEMENT Title %commontext;>
<!ATTLIST Title xml:space (preserve|default) "preserve">

<!ELEMENT PubNo (PubOrg, Kind, Num)>
<!ELEMENT AppNo (#PCDATA)>

<! --
|  Bibliography: References to other documents
|
|  The patent ref is expected to contain a GUID that
|  obeys the same convention as Patent's GUID attribute
-->
<!ELEMENT PatentRef (#PCDATA)>

<! --
|  Bibliography: Legalities
|
-->
<!ELEMENT FilingDate              (Date)>
<!ELEMENT IssueDate               (Date)>
<!ELEMENT PublicationDate         (Date)>
<!ELEMENT CalculatedExpirationDate (Date)>
<! --
   -Inventor should be Last Name, First Name if you can
    arrange it

<!ELEMENT Assignee (#PCDATA)>
<!ELEMENT Inventor (#PCDATA)>
<! --

-->
<!ELEMENT Priority (Date, AppNo, PubOrg)>
<!ELEMENT DesignatedStates          (Cntry+)>
```

708

709

710

FIG.7C

```
<!--
   Bibliography: Classifications

-->
<!--
   IPC

Edition number and primary/secondary assumed by processing software if
not supplied. Suggested meanings: edition 6 by default, first IPC listed
is the primary IPC.
-->
<!ELEMENT IPC (Section, Class, Subclass, Group, Subgroup)>
<!ATTLIST IPC edition NMTOKEN #IMPLIED
              primary (Y|N) #IMPLIED>
<!ELEMENT Section    (#PCDATA)>
<!ELEMENT Class      (Num)>
<!ELEMENT Subclass   (#PCDATA)>
<!ELEMENT Group      (#PCDATA)>
<!ELEMENT Subgroup   (#PCDATA)>
<!--
   US Classification
   The "class" of US Class being used is assumed if not
   supplied. Suggested meaning: Original by default.

-->
<!ELEMENT USClassification (USClass, USSubclass, USSuffix)>
<!ATTLIST USClassification
         class(Original|Xref|Unofficial|Digest) #IMPLIED>
<!ELEMENT USClass     (#PCDATA)>
<!ELEMENT USSubclass  (#PCDATA)>
<!ELEMENT USSuffix    (#PCDATA)>

<!--
   Bibliography: Misc.

   -xml:lang must, of course, conform to the XML standard.

-->
<!ELEMENT PublicationLanguage (#PCDATA)>
<!ATTLIST PublicationLanguage xml:lang NMTOKEN #REQUIRED>
<!ELEMENT NumClaims           (Num)>
<!ELEMENT NumDrawingPages     (Num)>
<!ELEMENT NumFigures          (Num)>
<!ELEMENT NumSpecPages        (Num)>
```

711

712

FIG.7D

```
<!--
   Abstract
-->
<!ELEMENT Abstract (P*)>
<!ATTLIST Abstract xml:space (preserve|default) "preserve">
```

713

```
<!--
   Unstructured Bibliography

   Necessary for a variety of reasons, most notably:
   -Prevents us from structuring all the ugly bib
    data in US Green Book.
   -We need it if we want XML2EQV and don't have
   all the bib data necessary to "render" the front page information
-->
<!ELEMENT UnstructuredBibliography (#PCDATA)>
<!ATTLIST UnstructuredBibliography
          xml:space (preserve|default) "preserve"
          xml:lang NMTOKEN #REQUIRED>
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714

```
<!--
   Brief Summary of the Invention
-->
<!ELEMENT BriefSummaryOfInvention (P*)>
<!ATTLIST BriefSummaryOfInvention
          xml:space (preserve|default) "preserve"
          xml:lang   NMTOKEN #REQUIRED>
```

715

```
<!--
   Brief Description of the Drawings
-->
<!ELEMENT DescriptionOfDrawings (P*)>
<!ATTLIST DescriptionOfDrawings
          xml:space (preserve|default) "preserve"
          xml:lang   NMTOKEN #REQUIRED>
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716

```
<!--
   Detailed Description of the Invention

-->
<!ELEMENT DescriptionOfInvention (P*)>
<!ATTLIST DescriptionOfInvention
          xml:space (preserve|default) "preserve"
          xml:lang   NMTOKEN #REQUIRED>
```

717

```
<!--
   Claims
 -->
 <!ELEMENT Claims (Claim|P)*>
 <!ATTLIST Claims xml:space (preserve|default) "preserve"
                  xml:lang   NMTOKEN #REQUIRED>
 <!ELEMENT Claim %commontext;>
 <!ATTLIST Claim id ID #REQUIRED>
```

718

FIG.7E

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<?xml version="1.0"?>
<!DOCTYPE Patent SYSTEM "APML_v0.1.DTD">

<Patent MajorVer="0" MinorVer="1" GUID="BP00UUUS3653663">

    <Bibliography>
        <Title xml:space="preserve">SPHERICAL SHELL GAME APPARATUS HAVING
INTERNAL CUPS AND A FREELY MOVEABLE BALL</Title>
        <PubNo>
            <PubOrg>US</PubOrg>
            <Kind>UU</Kind>
            <Num>3653663</Num>
        </PubNo>
        <AppNo>846329</AppNo>

        <PatentRef>BP00UUUS2100898</PatentRef>

        <FilingDate>
            <Date>19690731</Date>
        </FilingDate>
        <IssueDate>
            <Date>19720404</Date>
        </IssueDate>
        <CalculatedExpirationDate>
        <Date>19990404</Date>
        <CalculatedExpirationDate>

        <Assignee>Said Kinberg, by said Mayer</Assignee>
        <Inventor>Kinberg, Benjamin</Inventor>
        <Inventor>Mayer, Richard J.</Inventor>

        <DesignatedStates>
            <Cntry>US</Cntry>
        </DesignatedStates>

        <IPC>
            <Section>A</Section>
            <Class>
                <Num>63</Num>
            </Class>
            <Subclass>f</Subclass>
            <Group>906</Group>
            <Subgroup></Subgroup>
        </IPC>
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FIG.8A

```
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        <USClassification class="Original">
            <USClass>273</USClass>
            <USSubclass>96</USSubclass>
            <USSuffix>R</USSuffix>
        </USClassification>
        <USClassification class="Xref">
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            <USSubclass>115</USSubclass>
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        </USClassification>
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            <USSuffix>R</USSuffix>
        </USClassification>

        <PublicationLanguage xml:lang="en"/>
        <NumClaims>
            <Num>8</Num>
        </NumClaims>
        <NumDrawingPages>
            <Num>1</Num>
        </NumDrawingPages>
        <NumFigures>
            <Num>2</Num>
        </NumFigures>
    </Bibliography>

    <Abstract xml:space="preserve">
<P id="P0">A game including a hollow transparent spherical shell having a loose ball confined
therein and a plurality of consecutively numbered cups within the shell. The object of the
game is to transfer the ball from one cup to another in consecutively numbered
order.</P>
    </Abstract>

    <UnstructuredBibliography xml:space="preserve" xml:lang="en">United
States Patent    [19]
Kinberg et al.
[11]  Patent Number:    3,653,663
[45]  Date of Patent:    Apr. 4, 1972
----------
```

FIG.8B

[54] SPHERICAL SHELL GAME APPARATUS HAVING INTERNAL CUPS AND A FREELY MOVEABLE BALL

[75] Inventors: Benjamin Kinberg, 425 Riverside Drive, New York, NY, 10025; Richard J. Mayer, Bloomfield, NJ

[73] Assignee:

[21] Appl. No.: 846,329

[22] Filed: Jul. 31, 1969

Related U.S. Application Data

[51] Int. C1.....A63f 9/06

[52] U.S. C1.....273/96.R; 273/115; 273/95.R

[58] Field of Search.....273/95, 96, 113, 115

[56] References Cited

U.S. PATENT DOCUMENTS

2,100,898 11/1937 Bernett.....273/95

OTHER PUBLICATIONS

Playthings January, 1969 P.61

Primary Examiner--Richard C. Pinkham
Assistant Examiner--Marvin Siskind
Attorney, Agent, or Firm--Charles J. Worth

[57] ABSTRACT

A game including a hollow transparent spherical shell having a loose ball confined therein and a plurality of consecutively numbered cups within the shell. The object of the game is to transfer the ball from one cup to another in consecutively numbered order.

8 Claims, 1 Drawing Sheet

</UnstructuredBibliography>

FIG.8C

```
    <BriefSummaryOfInvention xml:space="preserve" xml:lang="en">
<P id="P1"><?format centered?>FIELD OF THE INVENTION</P>
<P id="P2">The present invention relates to games, and more particularly
to a game of skill.</P>
<P id="P3"><?format centered?>SUMMARY OF THE INVENTION</P>
<P id="P4">An object of the present invention is to provide a game which
requires a high degree of skill.</P>
<P id="P5">Another object is to provide such a game which is amusing to
children and adults.</P>
<P id="P6">Another object is to provide such a game which is attractive
in appearance.</P>
<P id="P7">Another object is to provide such a game which is sturdy in
construction.</P>
<P id="P8">A further object is to provide such a game which can be
fabricated in a simple and economical manner.</P>
<P id="P9">Other and further objects of the invention will be obvious
upon an understanding of the illustrative embodiment about to be
described, or will be indicated in the appended claims, and various
advantages not referred to herein will occur to one skilled in the art
upon employment of the invention in practice.</P>
<P id="P10">In accordance with the present invention, the foregoing
objects are generally accomplished by providing a game which comprises a
hollow transparent spherical shell, a loose ball confined with the shell,
and a plurality of spaced cups secured to the inner wall of the shell,
one of the cups having a side opening for admitting the ball at the
starting point.</P>
    </BriefSummaryOfInvention>

    <DescriptionOfDrawings xml:space="preserve" xml:lang="en">
<P id="P11"><?format centered?>BRIEF DESCRIPTION OF THE DRAWING</P>
<P id="P12">FIG.1 is an elevational view of the shell looking
horizontally at the outer end of the cup provided with the side
opening.</P>
<P id="P13">FIG.2 is a sectional view of one of the other cups taken
along the line 2-2 on FIG.1.</P>
    </DescriptionOfDrawings>

    <DescriptionOfInvention xml:space="preserve" xml:lang="en">
<P id="P14"><?format centered?>DESCRIPTION OF THE PREFERRED
EMBODIMENT</P>
<P id="P15">Referring now to the drawing in detail, there is shown a game
in accordance with the present invention which generally comprises a
hollow transparent spherical shell 10, a loose ball 11 confined within
the shell, and a plurality of cups secured to the inner wall of the
shell.</P>
```

FIG.8D

<P id="P16">For example, eight cups 12 are provided which are identified by numerals 1 thru 8 which are arranged in consecutive order. Consecutive letters of the alphabet could be employed instead of numerals. Preferably, the numerals are on the shell 10 at the base of the cups 12 although they could be on the cups. As shown in FIG.2, the cups are flared towards the center of the shell and are frusto-conical in shape. The cups are open at the outer end thereof and the inner wall of the shell provides a closure for these openings.</P>
<P id="P17">The shell 10 is formed of two hemi-spherical sections and four cups 12 are adhesively or otherwise secured to each shell section. Thereafter, the ball 11 is deposited in one of the shell sections and shell sections are secured to each other.</P>
<P id="P18">The cup identified by the numeral 1, which is the starting point of the game, has a side opening 14 for admitting the ball 11 by rolling the ball from the inner wall of the shell 10 through this opening.</P>
<P id="P19">The shell 10 has indicia thereon such as V-shaped marks or arrows 15 for indicating the direction from one cup to the following numbered cup, that is, from cup 1 to cup 2, from cup 2 to cup 3, and so forth.</P>
<P id="P20">The cups 2 may be spaced evenly, but preferably are spaced unevenly to make the game more difficult to be played. For example, as shown, the distance between cups 2 and 3 is greater than the distance between cups 1 and 2.</P>
<P id="P21">The game is played by rolling the ball 11 into cup 1 and then attempting to transfer the ball to cup 2 by tilting the shell in the proper angle and at the proper momentum. The player then attempts to transfer the ball from cup 2 to cup 3 and so on. If a cup is missed, the ball must be returned to cup 1 and the game must be restarted. This makes the game frustrating and requires a high degree of skill to play the same from cup 1 to cup 8 without a miss. When the game is played by more than one person and the first person misses, then the next person has a chance. This is continued until one person completes the game without a miss.<\P>
<P id="P22"><?format centered?>SUMMATION</P>
<P id="P23">From the foregoing description, it will be seen that the present invention provides an interesting, fascinating and frustrating game which can be played by one or more persons.</P>
</DescriptionOfInvention>

FIG.8E

```
<Claims xml:space="preserve" xml:lang="en">
    <P id="P24">We claim:</P>
    <Claim id = "C1">A game comprising a hollow transparent spherical
shell, a loose ball confined within said shell, and a plurality of spaced
apart cups having their bases secured to the inner wall of said shell so
that the ball may be consecutively transferred from cup to cup by
gravity, each transfer being effected by imparting a tilting motion to
said shell, one of said cups having an opening in its side for admitting
said ball.</Claim>
    <Claim id = "C2">A game according to claim 1, wherein said cups
are mounted directly to the inner wall of said shell.</Claim>
    <Claim id = "C3">A game according to claim 2, wherein said cups
are flared outwardly towards the center of said shell.</Claim>
    <Claim id = "C4">A game according to claim 2, wherein said cups
are spaced unevenly.</Claim>
    <Claim id = "C5">A game according to claim 2, wherein said cups
are identified by numerals arranged adjacently in consecutive
order.</Claim>
    <Claim id = "C6">A game according to claim 5, wherein said
numerals are on said shell at the base end of said cups.</Claims>
    <Claim id = "C7">A game according to claim 5, wherein said shell
has indicia for indicating the direction from one cup to the following
numbered cup.</Claim>
    <Claim id = "C8">A game according to claim 5, wherein the cup
identified by the lowest numeral is said cup having said side
opening.</Claim>
  </Claims>

</Patent>
```

FIG.8F

```
<?xml version="1.0"?>
<!DOCTYPE Patent SYSTEM "APML_v0.1.DTD">
<Patent MajorVer="0" MinorVer="1" GUID="BP00A2EP799999">

    <Bibliography>
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pump</Title>
        <PubNo>
            <PubOrg>EP</PubOrg>
            <Kind>A2</Kind>
            <Num>799999</Num>
        </PubNo>
        <AppNo>96202468.3</AppNo>

        <FilingDate>
            <Date>19960905</Date>
        </FilingDate>
        <PublicationDate>
            <Date>19971008</Date>
        </PublicationDate>
        <CalculatedExpirationDate>
            <Date>20160905</Date>
        </CalculatedExpirationDate>
        <Inventor>Cerruti, Roberto</Inventor>

        <Priority>
            <Date>19960405</Date>
            <AppNo>T0960265</AppNo>
            <PubOrg>IT</PubOrg>
        </Priority>
        <DesignatedStates>
            <Cntry>DE</Cntry>
            <Cntry>FR</Cntry>
            <Cntry>GB</Cntry>
        </DesignatedStates>

        <IPC edition = "6" primary = "Y">
            <Section>F</Section>
            <Class>
                <Num>4</Num>
            </Class>
            <Subclass>D</Subclass>
            <Group>29</Group>
            <Subgroup>02</Subgroup>
        </IPC>
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FIG.9A

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        <IPC edition = "6">
            <Section>F</Section>
            <Class>
                <Num>4</Num>
            </Class>
            <Subclass>D</Subclass>
            <Group>19</Group>
            <Subgroup>04</Subgroup>
        </IPC>

        <PublicationLanguage xml:lang="en"/>
        <NumClaims>
            <Num>8</Num>
        </NumClaims>
    </Bibliography>

    <Abstract xml:space="preserve">
<P id="P0">The present invention relates to a rotor (1) of a vacuum pump
comprising a rotatable shaft (5) and a plurality of spaced apart parallel
rotor disks (2, 3) secured to said rotatable shaft (5), such rotor being
provided with a corrosion-resistant protective coating formed by a layer
of polymeric material.</P>
    </Abstract>

    <UnstructuredBibliography xml:space="preserve" xml:lang="en">[19]
Publishing Organization EP

[11] Publication Number
799999

[12] Kind
A2

[21] Application Number
96 96202468

[51] Intl. C1.6
F04D 29/02 A
F04D 19/04 B

[22] Date of Filing
05.09.96

[30] Priority
05.04.96 IT 96TO   265
```

FIG.9B

[43] Date of publication
08.10.97

[84] Designated Contracting States
DE FR GB

[71] Applicant(s)
VARIAN S.P.A.

[72] Inventor(s)
CERRUTI, ROBERTO

[54] Title
A ROTOR FOR TURBOMOLECULAR PUMP

[56] Abstract
The present invention relates to a rotor (1) of a vacuum pump comprising a rotatable shaft (5) and a plurality of spaced apart parallel rotor disks (2,3) secured to said rotatable shaft (5), such rotor being provided with a corrosion-resistant protective coating formed by a layer of polymeric material.

</UnstructuredBibliography>

<DescriptionOfInvention xml:space="preserve" xml:lang="en">
<P id="P1">The present invention is concerned with the rotor of a vacuum pump.</P>
<P id="P2">More particularly the invention refers to a rotor for those vacuum pumps known as turbomolecular pumps that are to be employed in the presence of particularly corrosive gases.</P>
<P id="P3">As it is well known, a turbomolecular pump can schematically be regarded as comprising an outer casing in which a number of gas pumping stages are housed.</P>
<P id="P4">The gas pumping stages are generally obtained through an assembly of stator rings cooperating with rotor disks that are secured to a rotatable shaft driven by the pump motor.</P>
<P id="P5">The pumping stages comprise a space for allowing the gas flow, named pumping channel, where the surfaces of the rotor disk and the facing stator are relatively spaced away, and tight zones where the surfaces of the rotor disk and the facing stator are very near to each other.</P>
<P id="P6">The rotor disks can be either flat (plane) disks or disks that are provided with closely spaced apart inclined blades. </P>

FIG.9C

<P id="P7">A vacuum pump of the turbomolecular type comprises both flat disks and bladed disks, and is capable to achive low pressure levels in the order of 10<! - - Esc(<SP>) - ->- 8<! - - Esc(</SP>) - -> Pa.</P>
<P id="P8">In order to reach the above vacuum levels with the presently used pumps, the rotor must rotate at a speed near to 100,00 rpm. </P>
<P id="P9">It has been known to use turbomolecular pumps in the field of integrated circuits (ICs) manufacturing.</P>
<P id="P10">In the manufacturing cycle of integrated circuits there are used gas mixtures such as HC1, HBr, CL<! - - Esc(<SB>) - - 2<! - - Esc(</SB>) - ->, F1<! - - Esc(<SB>) - - >2<! - - Esc(</SB>) - ->, NHK! - - Esc(<SB>) - ->3 <! Esc(</SB>) - -> , etc. that are well-known highly corrosive gases.</P>
<P id="P11">One of the main problem when using turbomolecular pumps in the ICs manufacturing industry is due to the accumulation of a not negligible amount of gas because of the diffusion through the pumping stages.</P>
<P id="P12">As a consequence, the surfaces of the internal components of the pump, particularly the rotor surface, come into direct contact with such gas mixtures and are subjected to the corrosive action thereof.</P>
<P id="P13">There are also known rotors for turbomolecular pumps provided with a metal or ceramic coating as a protection against the action of such corrosive gases.</P>
<P id="P14">The known protective metal coating is generally applied to the rotor by means of nickel plating, zinc plating or anodizing processes.</P>
<P id="P15">As already mentioned the rotor of a turbomolecular pump is rotated at very high speeds, usually not lower than 25,000 rpm. </P>
<P id="P16">Due to the very high rotation speed of the rotor and to the extremely reduced gap between the pump rotor and the stator in the pumping stages, a mass distribution in the rotor body that is not homogeneous with respect to its axis of rotation can cause a force unbalance such as to jeopardize the working of the pump up to a failure of its components.</P>
<P id="P17">Thus an essential requirement in manufacturing a turbomolecular pump, particularly to be used with corrosive gases, is to achieve a substantially perfect rotational balancement of the rotor body.</P>
<P id="P18">The known metal or ceramic coatings used until now have the drawback of being unsuitable for application onto objects that are to remain perfectly balanced while maintaining very smooth surfaces such as the rotor of a turbomolecular pump. Namely, due to the complex geometrical shape and the small size of the areas in which the blades are attached to the rotor the thickness of the metal or ceramic coating can result as not adequate and easy to be corroded away.</P>

FIG.9D

<P id="P19">In order to prevent this from happening it is often increased the amount of the protective material deposited onto the rotor body, but this countermeasure can lead to a not uniform thickness of the protection coating of the flat surfaces of the rotor disks that sometimes results in being too thick.</P>
<P id="P20">Consequently an additional finishing step becomes necessary in order to level the surfaces on which the deposited material has a not uniform thickness.</P>
<P id="P21">The object of the present invention is to overcome the above mentioned drawbacks by realizing a rotor for a vacuum pump that is corrosion resistant while at the same time has an easy and inexpensive construction.</P>
<P id="P22">The above objects of the present invention are accomplished by a rotor as claimed in claim 1.</P>
<P id="P23">Additional objects of the invention are achieved by a rotor as claimed in the dependent claims.</P>
<P id="P24">Further characteristics and advantages of the present invention will become evident from the description of some preferred but not exclusive embodiments thereof that are illustrated - only by way of example in the attached drawings, in which:</P>
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<LI>Figure 1 is a perspective partial view of a rotor of a turbomolecular pump; and
<LI>Figure 2 is an enlarged cross-section view of a detail of the rotor according to the invention.
</SL>)-->
<P id="P25">With reference to Figure 1, a rotor 1 of a turbomolecular pump comprises a plurality of flat rotor disks 2 and a plurality of rotor disks 3 provided with projecting inclined blades 4.</P>
<P id="P26">The rotors 2 and 3 are secured to a rotatable shaft 5 driven into rotation by a pump motor (not shown)</P>
<P id="P27">Referring also to the enlarged-cross section view of Fig.2, the surface of the rotor according to the invention is covered with a polymeric protective layer of film 6 that is uniformely distributed over the whole rotor surface. The polymer is preferably a straight-chain organic compound having a molecular weight higher than 10,000 and is electrically insulating.</P>
<P id="P28">In the embodiment shown in Fig.2, the thickness of the protective layer 6 is shown much larger than the real size for a better appreciation.</P>
<P id="P29">The coating layer 6 is preferably obtained by polymerization of a reactive monomer over the rotopr surface, under vacuum conditions.</P>

FIG.9E

<P id="P30">In a preferred embodiment of the invention the thickness fo the protective layer 6 is comprised between 12 and 20 μm, with a tolerance of about ± 2 μm, so that the thickness ranges between about 10 and 22 μm.</P>
<P id="P31">A preferred polymeric material for the layer 6 is a so-called poly-(p-xylylene), that is a polymer of (p-xylylene). In this case the coating process comprises a vaporization of a dimmer of (p-xylylene) under vacuum, preferably under a pressure of 100 Pa at a temperature of aout 150°C.</P>
<P id="P32">Then the vapor is passed through a pyrolysis zone at a temperature of about 680°C and a pressure of 50 Pa thus forming the monomer of (p-xylylene).</P>
<P id="P33">The monomer is then admitted into a coating chamber under a lower pressure, containing the rotor body that is kept rotating for a better distribution of the coating. The rotor is substantially at room temperature, i.e. is "cold" in respect of the monomer and this temperature difference causes a condensation with substantially simultaneous polymerization of the reactive monomer onto the rotor surface.</P>
<P id="P34">A suitable dimmer of (p-xylylene) is available from Ausimont under the trade name GALAXYL, or from Union Caride under the trade name PARYLENE.</P>
<P id="P35">From laboratory comparative tests carried out by the applicant it has been discovered that the resistance to corrosion of a rotor treated according to the invention is much higher than that of rotors protected by conventional ceramic or metal layers.</P>
<P id="P36">It is deemed that the superior resistance to corrosion of the rotor according to the invention derives from both the corrosion resistant properties of the polymer coating, together with the high uniformity of the deposited layer which extends also over sharp edges or recessed areas, particularly at the junction of the rotor blades.</P>
<P id="P37">It is evident that the polymeric coating according to the invention can be also applied to other (stationary) components of a turbomolecular pump that are exposed to corrosion, such as the stator rings, the spacing rings located between the stators, the pump body and its inner surface.</P>
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FIG.9F

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    <Claim id = "C1">A rotor (1) for a vacuum pump (1) comprising a
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characterized in that the whole surface of said rotor is covered by a
corrosion-resistant protective coating formed by a polymeric material
layer having a uniform thickness comprised between 10 and 22  m.</Claim>
    <Claim id = "C2">A rotor as claimed in claim 1, characterized in
that said protective coating is formed by a straight-chain organic
compound, electrically insulating and having a molecular weight higher
than 10,000.</Claim>
    <Claim id = "C3">A rotor as claimed in claim 1 or 2,
characterized in that said protective coating is formed through a
polymerization under vacuum of a reactive monomer onto the rotor
surface.</Claim>
    <Claim id = "C4">A rotor as claimed in any preceding claim,
characterized in that said protective coating is resistant to the
corrosive action of gases used in the manufacturing of integrated
circuits, particularly those of the group formed by HCl, HBr,
CL<!--Esc(<SB>)-->2<!--Esc(</SB>)-->, FI<!--Esc(<SB>)-->2<!--Esc(</SB>)-->,
NH<!--Esc(<SB>)-->3<!--Esc(</SB>)--> and mixture
thereof.</Claim>
    <Claim id = "C5">A rotor as claimed in any preceding claim,
characterized in that said polymeric material is poly-(p-xylene).</Claim>
    <Claim id = "C6">A turbomolecular pump comprising a rotor (1) as
claimed in claims 1 to 5.</Claim>
    <Claim id = "C7">A turbomolecular pump as claimed in claim 6
characterized in that at least one other staionary component of the said
pump is provided with a corrosion resistant protective layer comprising a
polymer.</Claim>
    <Claim id = "C8">A turbomolecular pump as claimed in claim 6,
characterized in that said polymer is poly-(p-xylylene).</Claim>
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FIG.9G

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FIG.10A

FIG.10B

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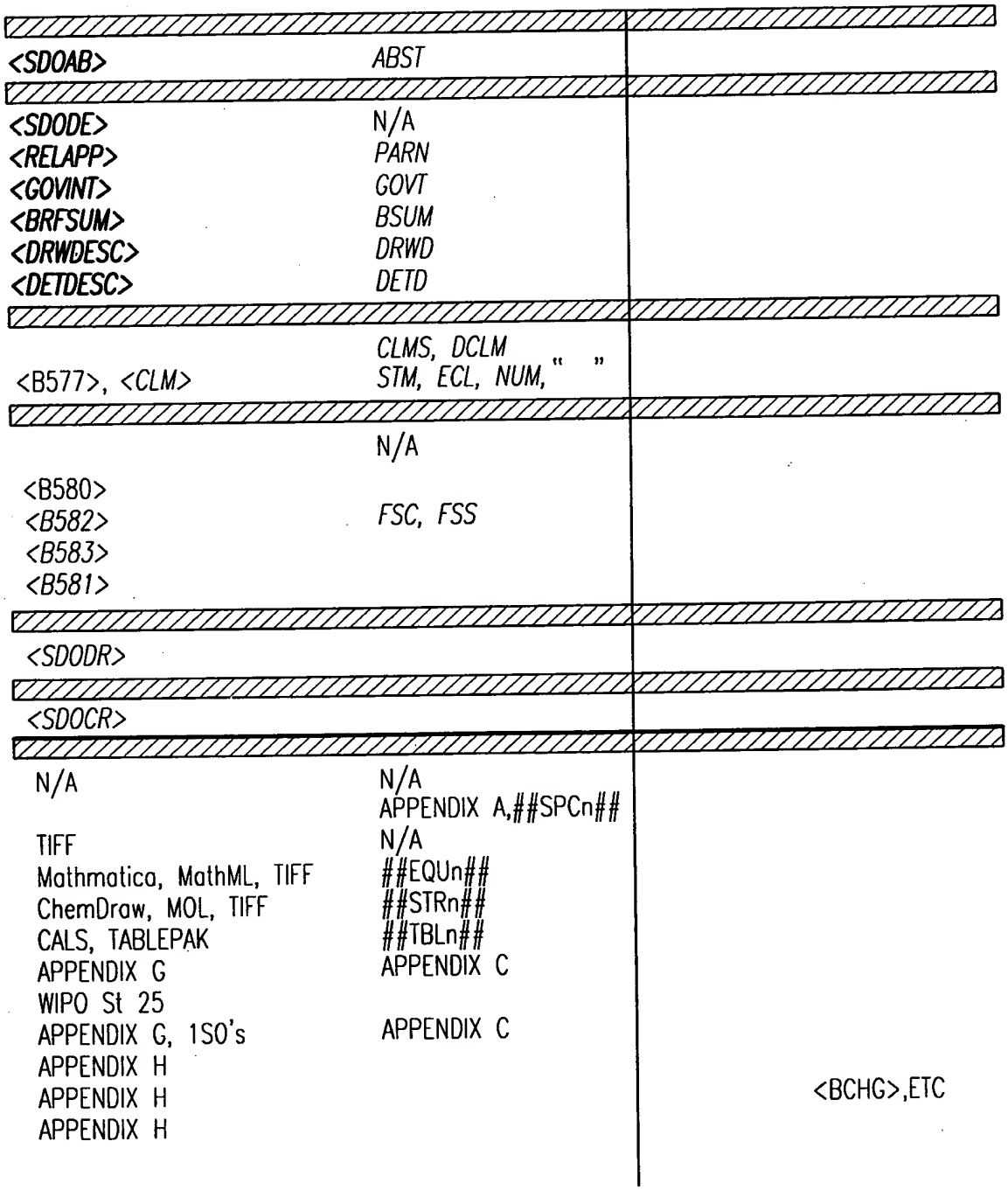
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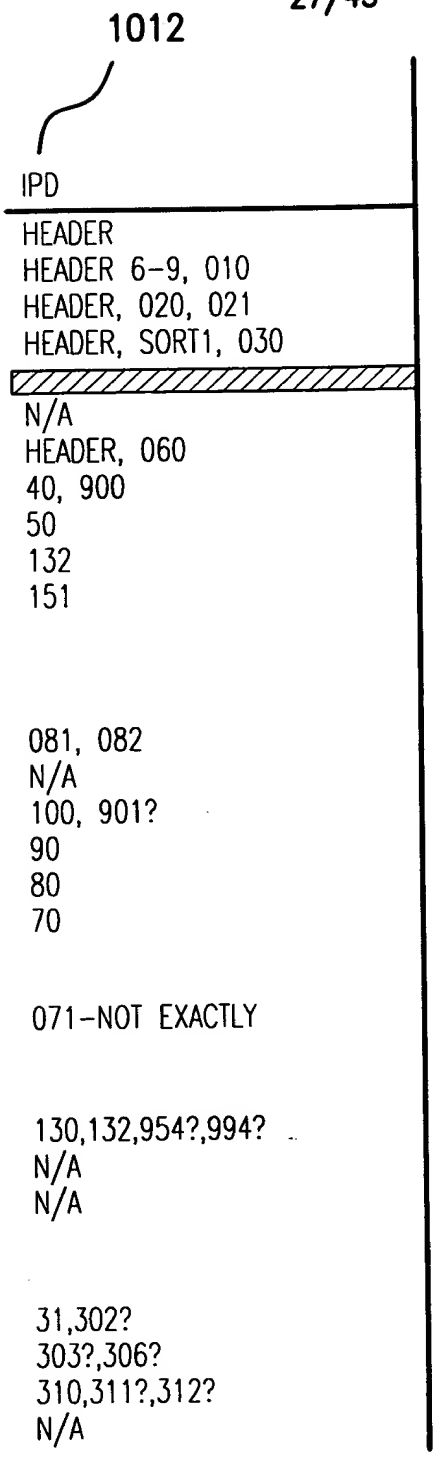
FIG.10C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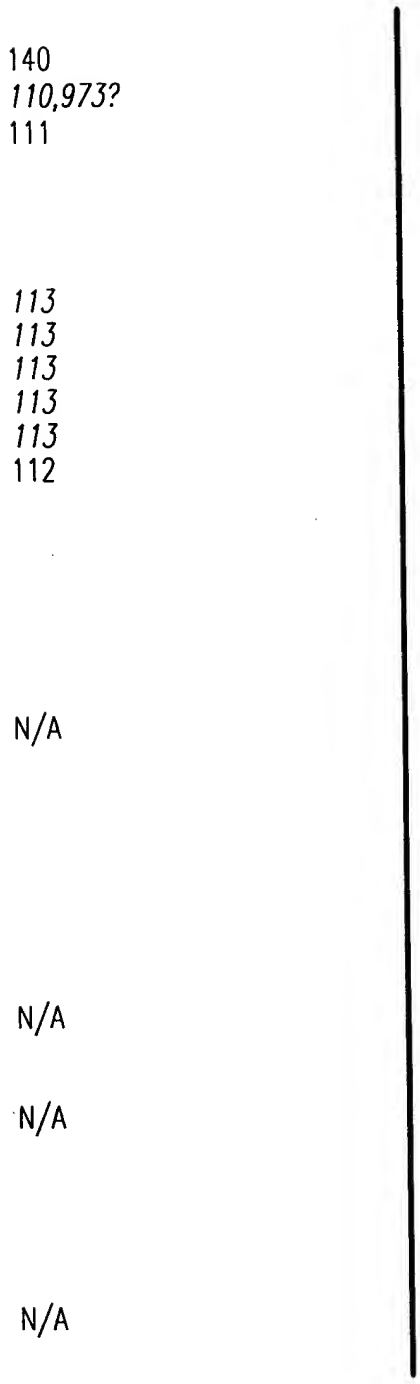

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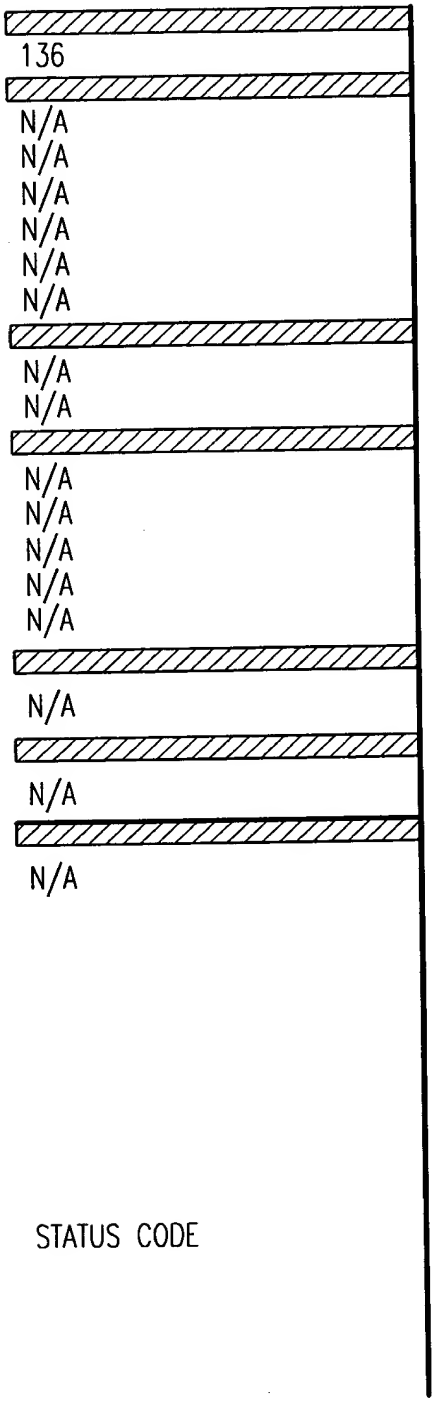

FIG.10F

Replacement Sheet
Sheet 30 of 45
Appl. No. 09/545,608; Filed: Apr 7, 2000
Dkt No. 2222.0400001; Group Unit: 2141
Inventors: HOHMANN et al.
Tel. No.: 202-371-2600
For: An Intellectual Asset Protocol for Defining Data Exchange Rules and Formats for Universal Intellectual Asset Documents, and .....

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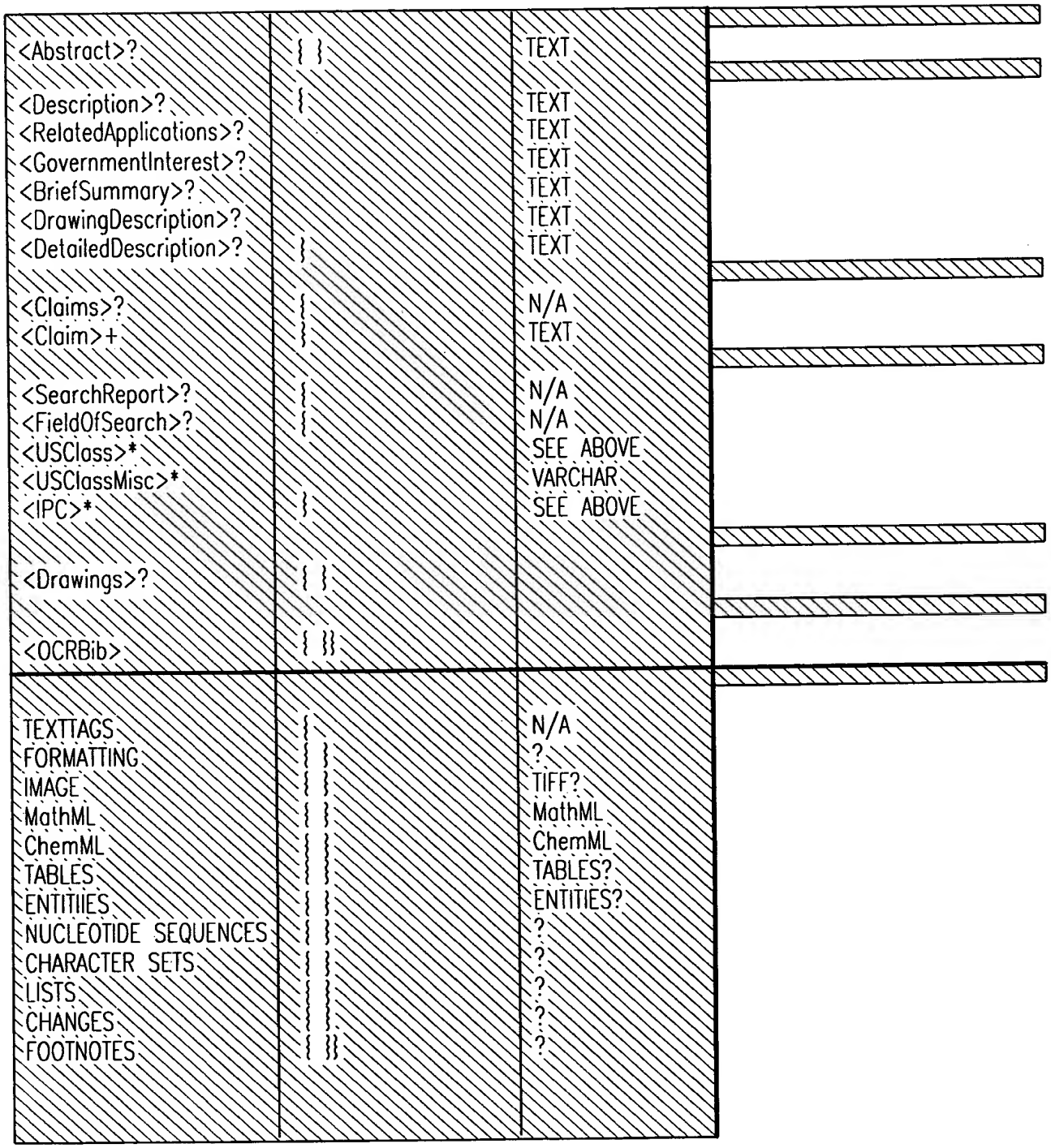
FIG. 10H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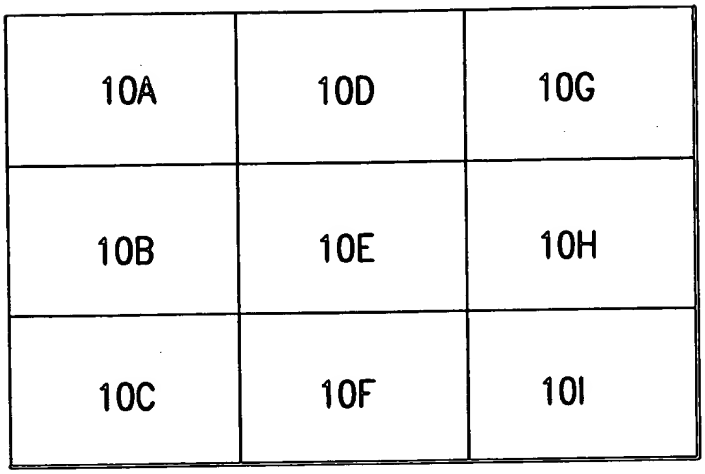

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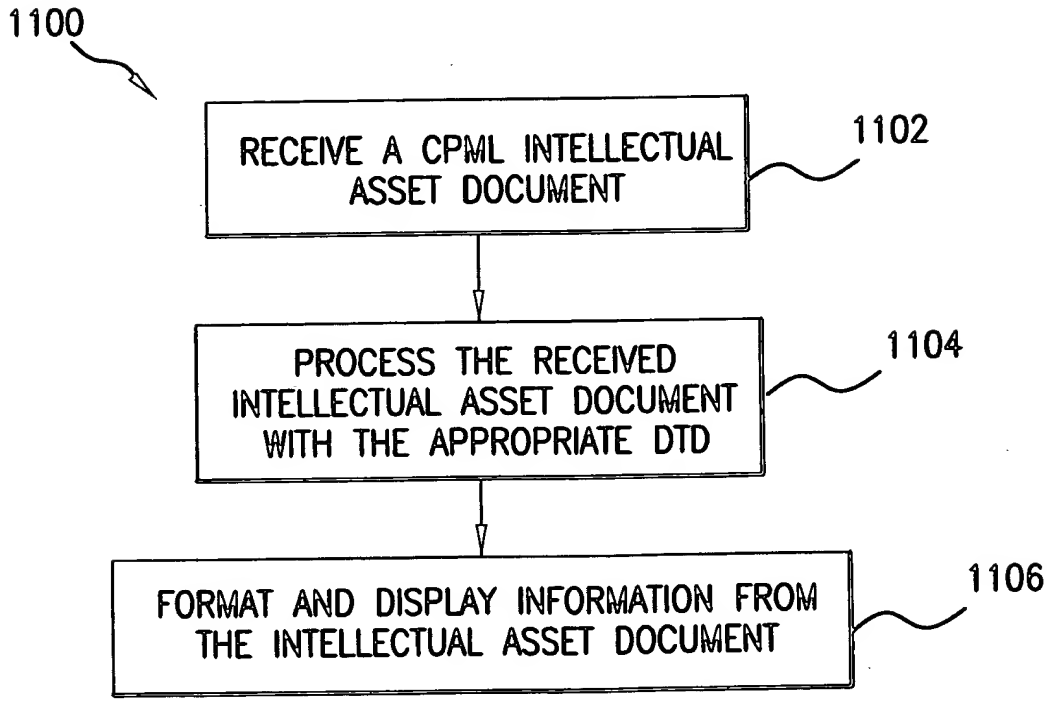

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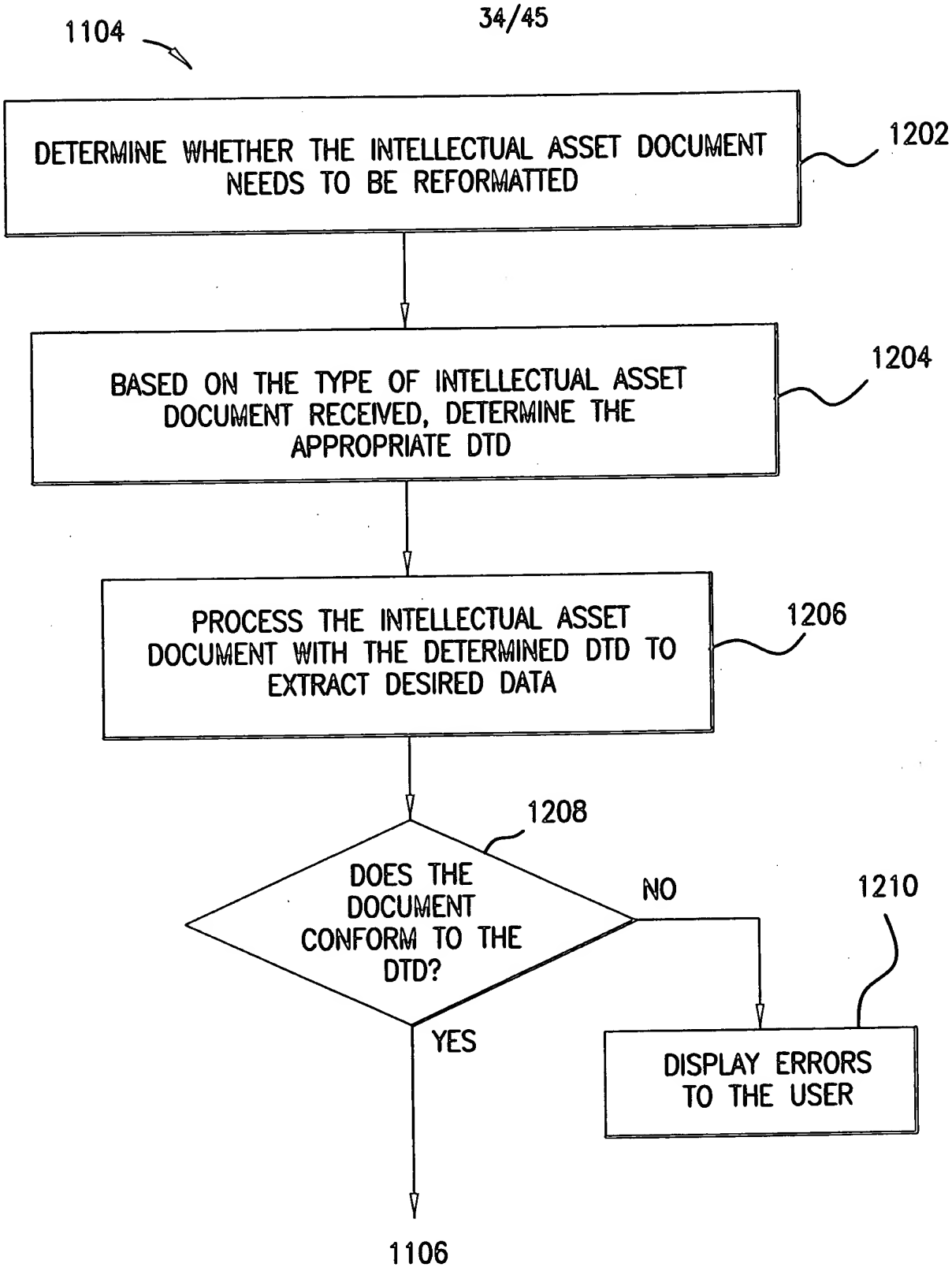
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FIG. 12

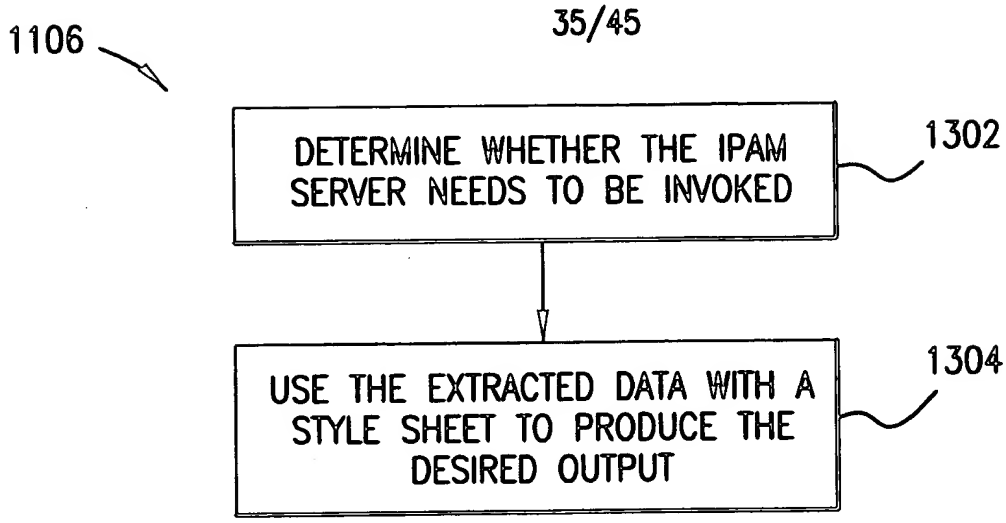
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FIG.13

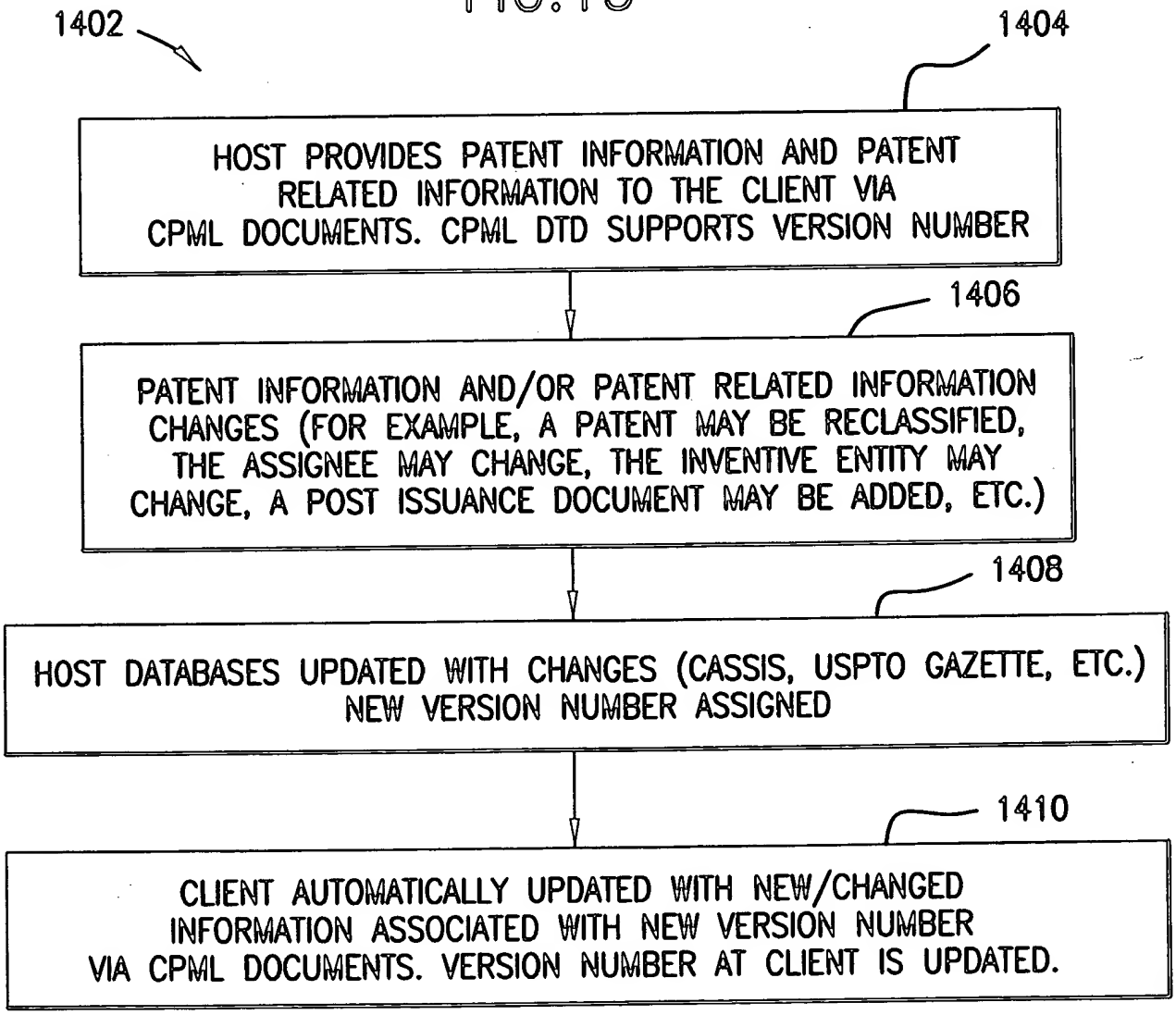
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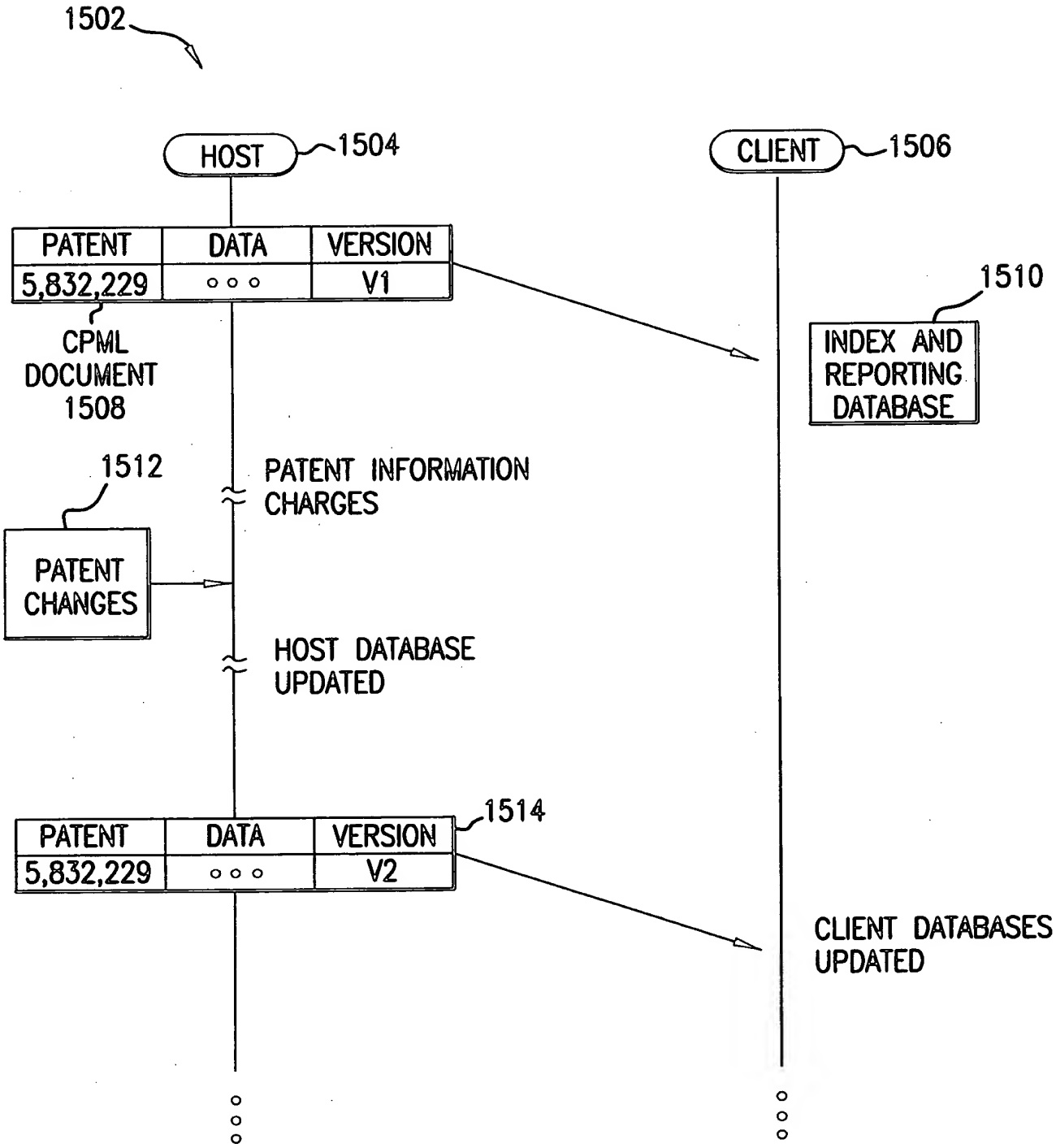
FIG.14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CLIENT DATABASES UPDATED

FIG. 15

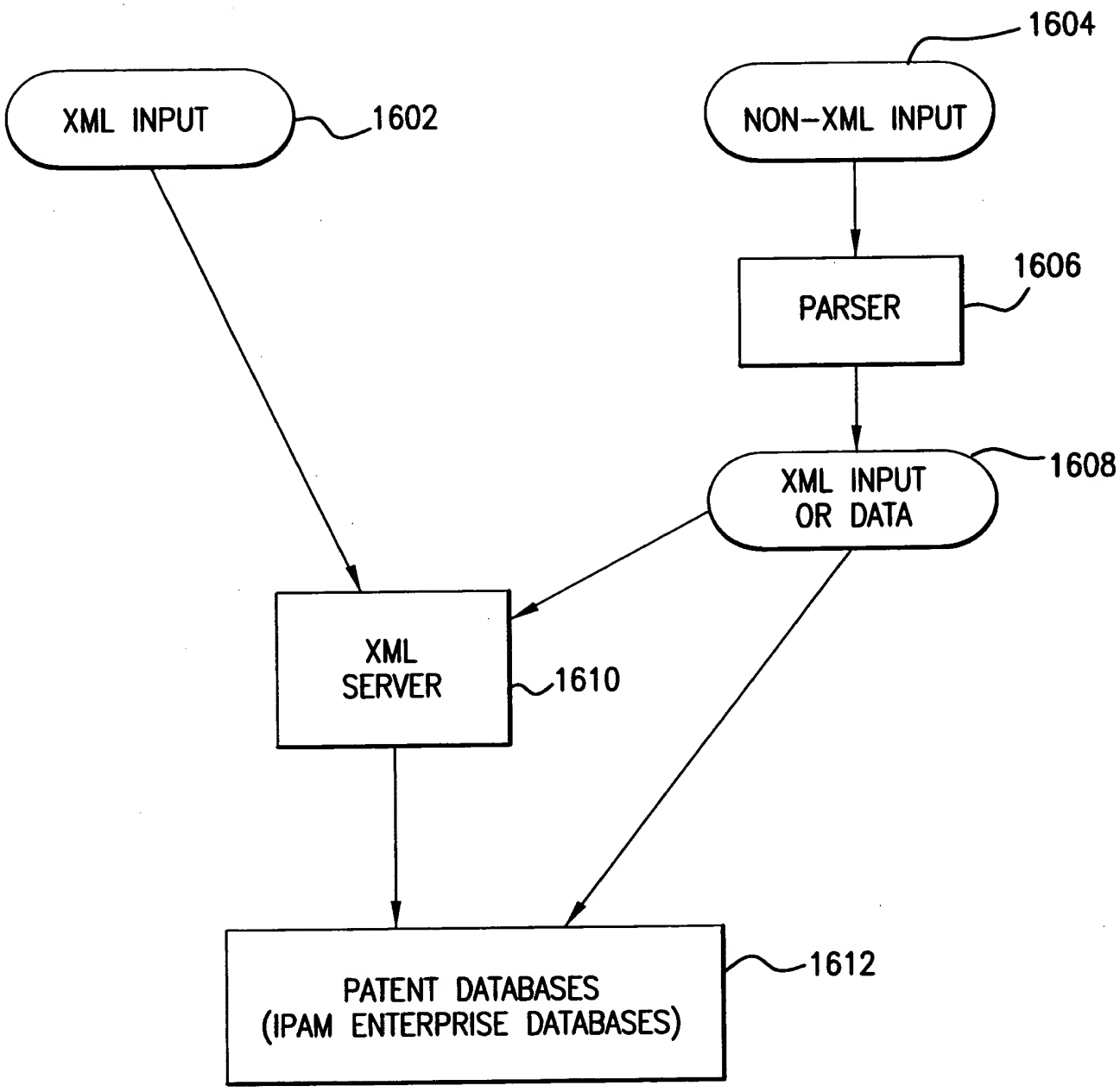
XML INPUT
1602
NON-XML INPUT
1604
PARSER
1606
XML INPUT OR DATA
1608
XML SERVER
1610
PATENT DATABASES (IPAM ENTERPRISE DATABASES)
1612

FIG.16

```
<?xml version="1.0"?>

<!--Version 1.0a of the IPAM Electronic Document Order and Download
Protocol-->

<!--Expected Usage:-->
<!--IPAM sends EODOrderReq1.0a, Aurigin responds with EODOrderAck1.0a-->
<!--IPAM sends (0,n) EODQueryReq1.0a, Aurigin responds EODQueryAck1.0a-->
<!--IPAM sends EODDownloadReq1.0a, Aurigin responds with
EODDownloadAck1.0a-->
<!--if there is anything to download, Ack contains list of ShipmenntIDs-->
<!--IPAM sends EODShipmentReq1.0a, Aurigin responds with
EODShipmentAck1.0a-->
<!--Shipment Ack contains URLs of all of the parts that make upa
shipment-->
<!--IPAM downloads all of these parts and installs them.-->
<!--When download is successful, IPAM sends EODShipmentDone1.0a.-->
<!--No reply is necessary from Aurigin.....
      -->

<!--IPAM Electronic Document Order REQUEST-->
<!--Issued by IPAM Server at customer site to Aurigin-->

<!--ELEMENT EODOrderReq1.0a (ServerID, (DOC)+, UserInfo)>

<!ELEMENT ServerID          (#PCDATA)>
<!ELEMENT Doc               (#PCDATA)>
<!ELEMENT UserInfo          (Email, DeptID, UserID)>

<!ELEMENT Email             (#PCDATA)>
<!ELEMENT DeptID            (#PCDATA)>
<!ELEMENT UserID            (#PCDATA)>

<!--IPAM Electronic Document Order ACKNOWLEGEMENT-->
<!--Issued by Aurigin in response to request-->

<!ELEMENT EODOrderAck1.0a (Valid|EODOrderError)>

<!--Valid can send a message back that can go to the GUI-->
<!ELEMENT Valid             (#PCDATA)

<!ELEMENT EODOrderError (ParseError|NoProto|UnkProto|InvalidServer)>
```

FIG. 17A

```
<!--ParseError contains the XML parse error.-->
<!ELEMENT ParseError (ErrorCode, URL, Reason, srcText, Line, LinePos,
FilePos)>
<!ELEMENT ErrorCode          (#PCDATA)>
<!ELEMENT URL                (#PCDATA)>
<!ELEMENT Reason             (#PCDATA)>
<!ELEMENT srcText            (#PCDATA)>
<!ELEMENT Line               (#PCDATA)>
<!ELEMENT LinePos            (#PCDATA)>
<!ELEMENT FilePos            (#PCDATA)>

<!--NoProto=No Doctype-->
<!ELEMENT NoProto            EMPTY >

<!--UnkProto=Root node is not EODOrderReq1.0a -- >
<!ELEMENT UnkProto           EMPTY >

<!--InvalidServer: not sure if ServerID will be validated-->
<!ELEMENT InvalidServer      EMPTY >

<!--IPAM Electronic Document Query REQUEST-->
<!--Issued by IPAM Server at customer site to Aurigin-->

<!ELEMENT EODQueryReq1.0a (ServerID, (Doc)+, DocFormat)>
<!ELEMENT DocFormat          (#PCDATA)>

<!--IPAM Electronic Document Query ACKNOWLEDGEMENT-->
<!--Issued by Aurigin in response to request-->

<!ELEMENT EODQueryAck1.0a  ((DocStatus)+|EODQueryError)>
<!ELEMENT DocStatus          (Doc, Status, Link)>
<!ELEMENT Status             (#PCDATA)>
<!ELEMENT Link               (#PCDATA)>
<!ELEMENT EODQueryError      (ParseError|InvalidServer|InvalidFormat)>
<!ELEMENT InvalidFormat      EMPTY >

<!--IPAM Download Request-->
<!--Issued by IPAM Server at customer site to Aurigin-->
```

FIG.17B

```
<!ELEMENT EODDownloadReq1.0a (ServerID)>

<!--IPAM Electronic Document Order ACKNOWLEGEMENT-->
<!--Issued by Aurigin in response to request-->

<!ELEMENT EODDownloadAck1.0a ((ShipInfo)*|EODDownloadError)>
<!ELEMENT ShipInfo           (ShipID, ShipType)>
<!ELEMENT ShipID             (#PCDATA)>
<!ELEMENT ShipType            (SubscriptionShip|OrderShip|CancelledShip)>
<!ELEMENT SubscriptionShip   EMPTY >
<!ELEMENT OrderShip          EMPTY >
<!ELEMENT EODDownloadError   (ParseError|InvalidServer)>

<!--IPAM Shipment REQUEST-->
<!--Issued by IPAM Server at customer site to Aurigin-->

<!ELEMENT EODShipmentReq1.0a (ServerID, ShipID)>

<!--IPAM Shipment ACKNOWLEGEMENT-->
<!--Issued by Aurigin in response to request-->

<!ELEMENT EODShipmentAck1.0a ((ChunkURL)+|EODShipmentError)>
<!ELEMENT ChunkURL           (#PCDATA)>
<!ELEMENT EODShipmentError   (ParseError|InvalidServer|InvalidShipID)>
<!ELEMENT InvalidShipID      EMPTY >

<!--IPAM Shipment COMPLETE-->
<!--Issued by IPAM Server at customer site to Aurigin-->

<!ELEMENT EODShipmentDone1.0a (ServerID, ShipID)>
```

FIG.17C

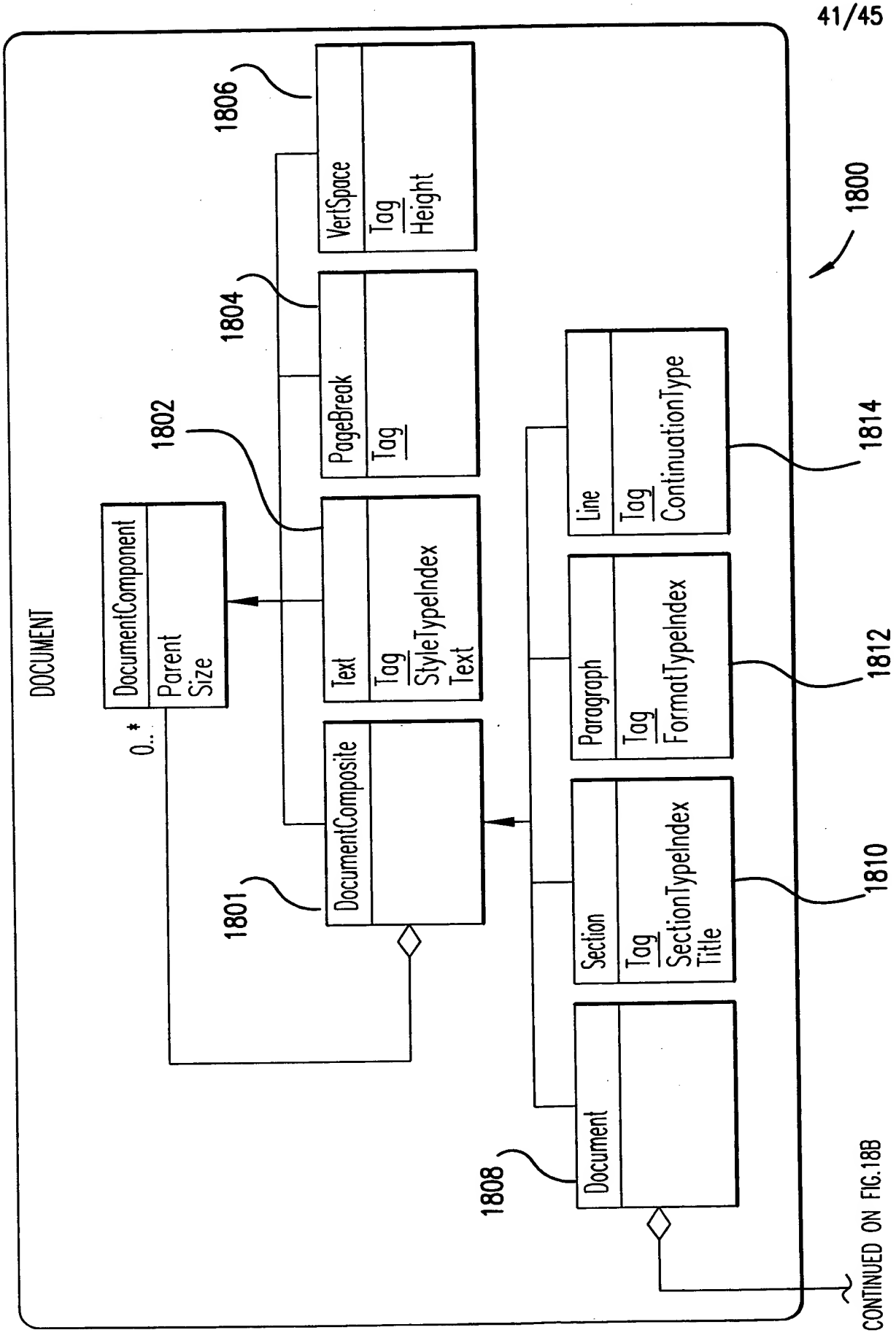
DOCUMENT
1800
1801
DocumentComposite
1802
DocumentComponent
Parent
Size
0..*
1804
PageBreak
Tag
1806
VertSpace
Tag
Height
Text
Tag
StyleTypeIndex
Text
1808
Document
1810
Section
Tag
SectionTypeIndex
Title
1812
Paragraph
Tag
FormatTypeIndex
1814
Line
Tag
ContinuationType
CONTINUED ON FIG.18B

FIG.18A

Replacement Sheet
Sheet 42 of 45
Appl. No. 09/545,608; Filed: Apr 7, 2000
Dkt No. 2222.0400001; Group Unit: 2141
Inventors: HOHMANN et al.
Tel. No.: 202-371-2600
For: An Intellectual Asset Protocol for Defining Data Exchange Rules and Formats for Universal Intellectual Asset Documents, and .....

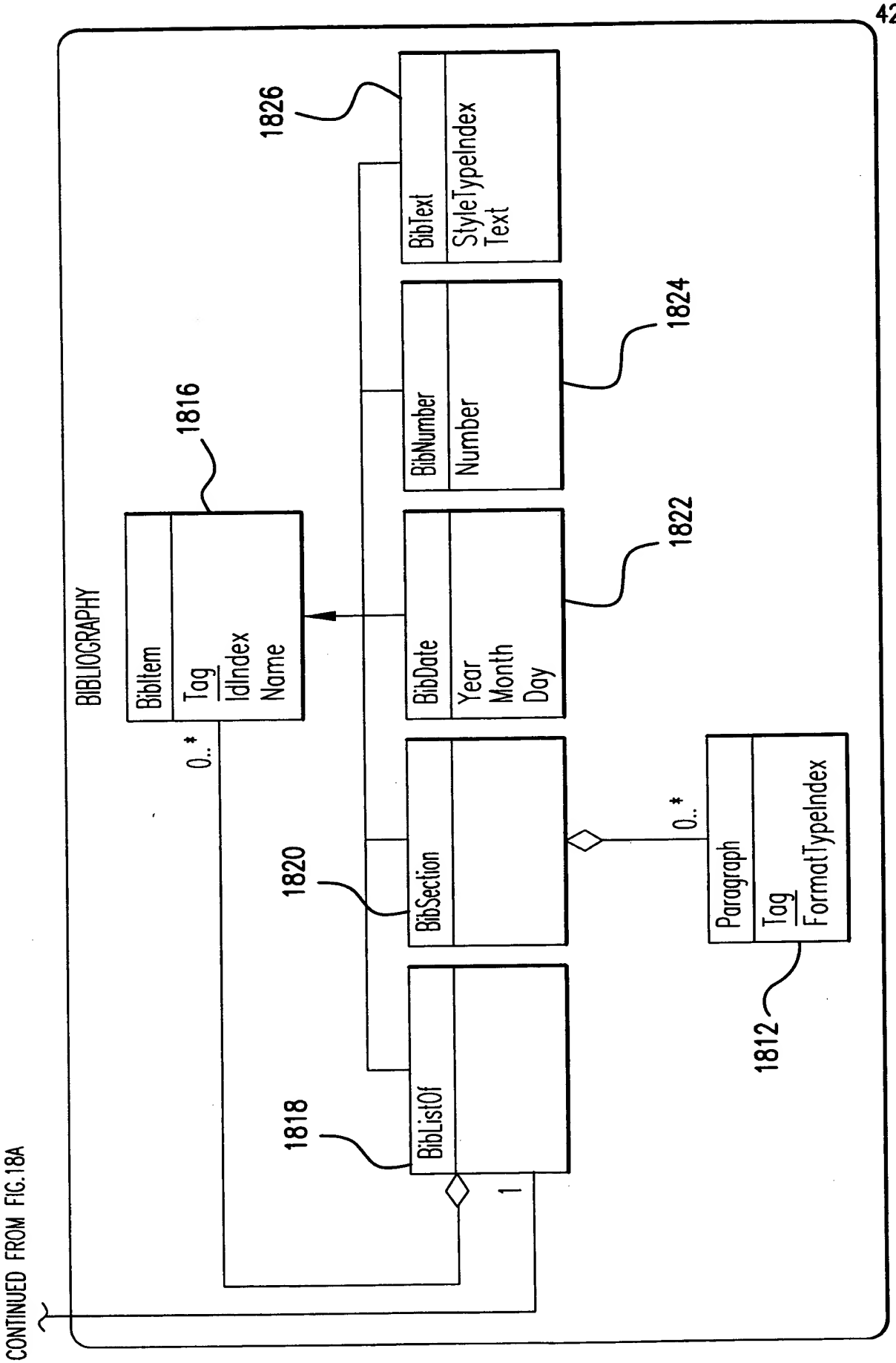

FIG.18B

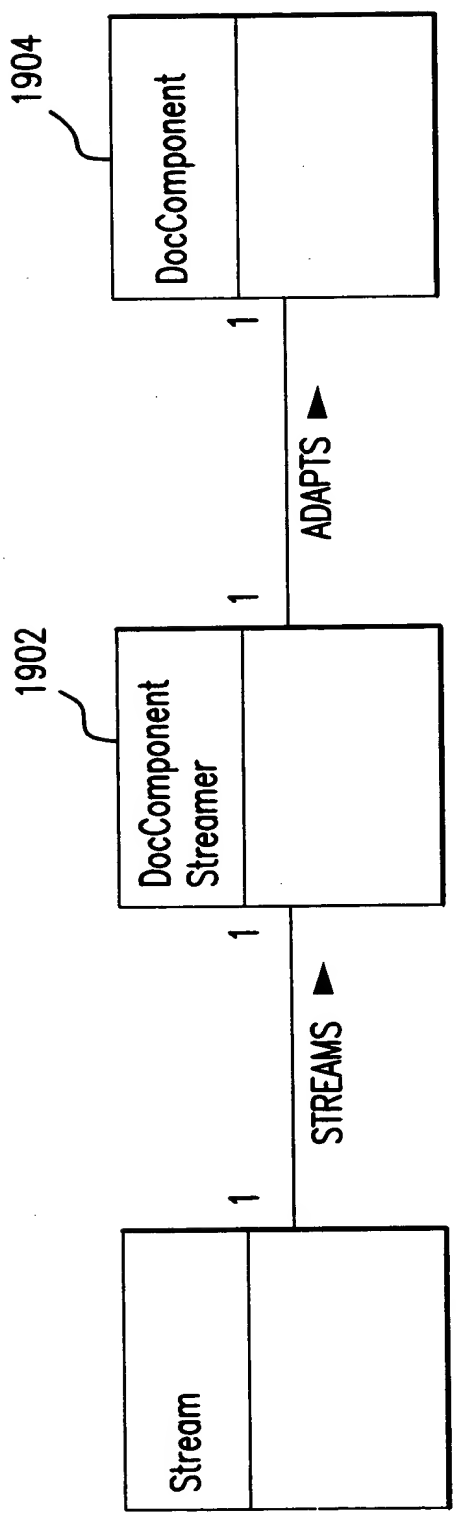
1904
DocComponent
1
ADAPTS
1
1902
DocComponent Streamer
1
STREAMS
1
Stream

FIG.19

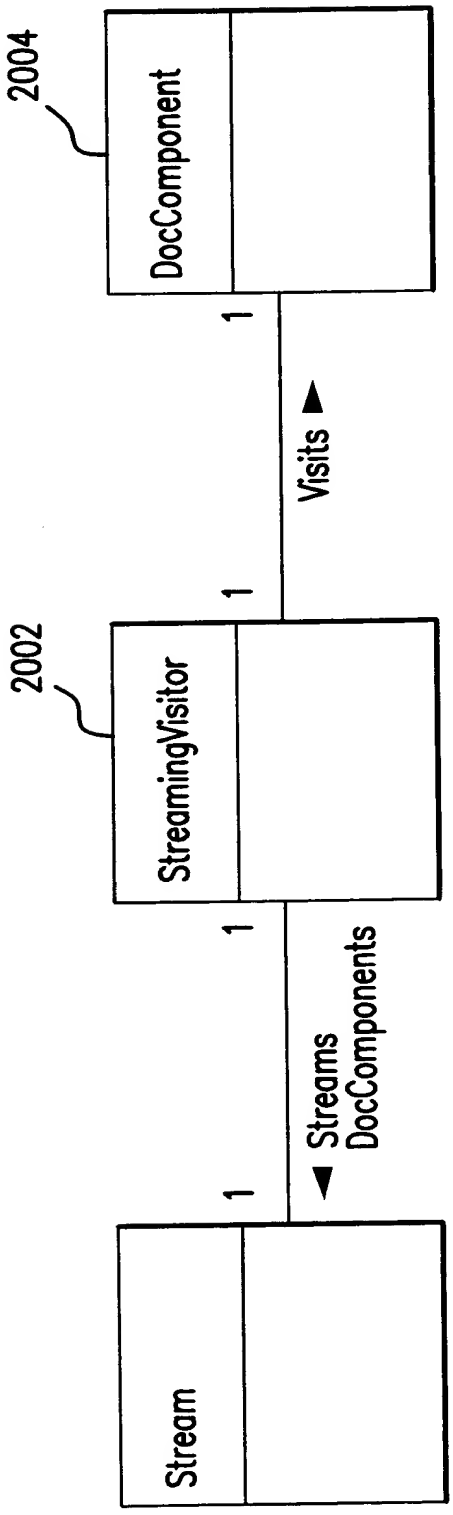
2004
DocComponent
1
Visits
1
2002
StreamingVisitor
1
Streams DocComponents
1
Stream

FIG.20

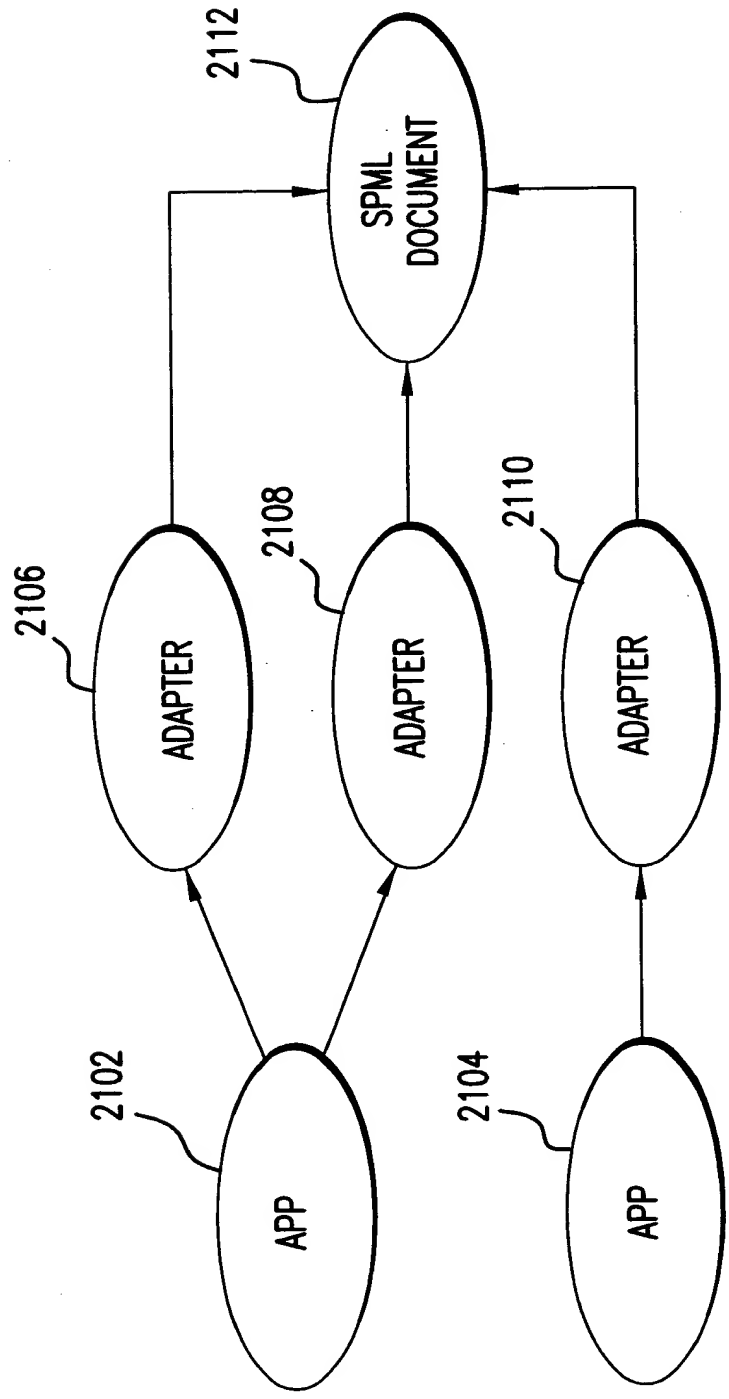
2112
SPML DOCUMENT
2106
ADAPTER
2108
ADAPTER
2110
ADAPTER
2102
APP
2104
APP

FIG.21

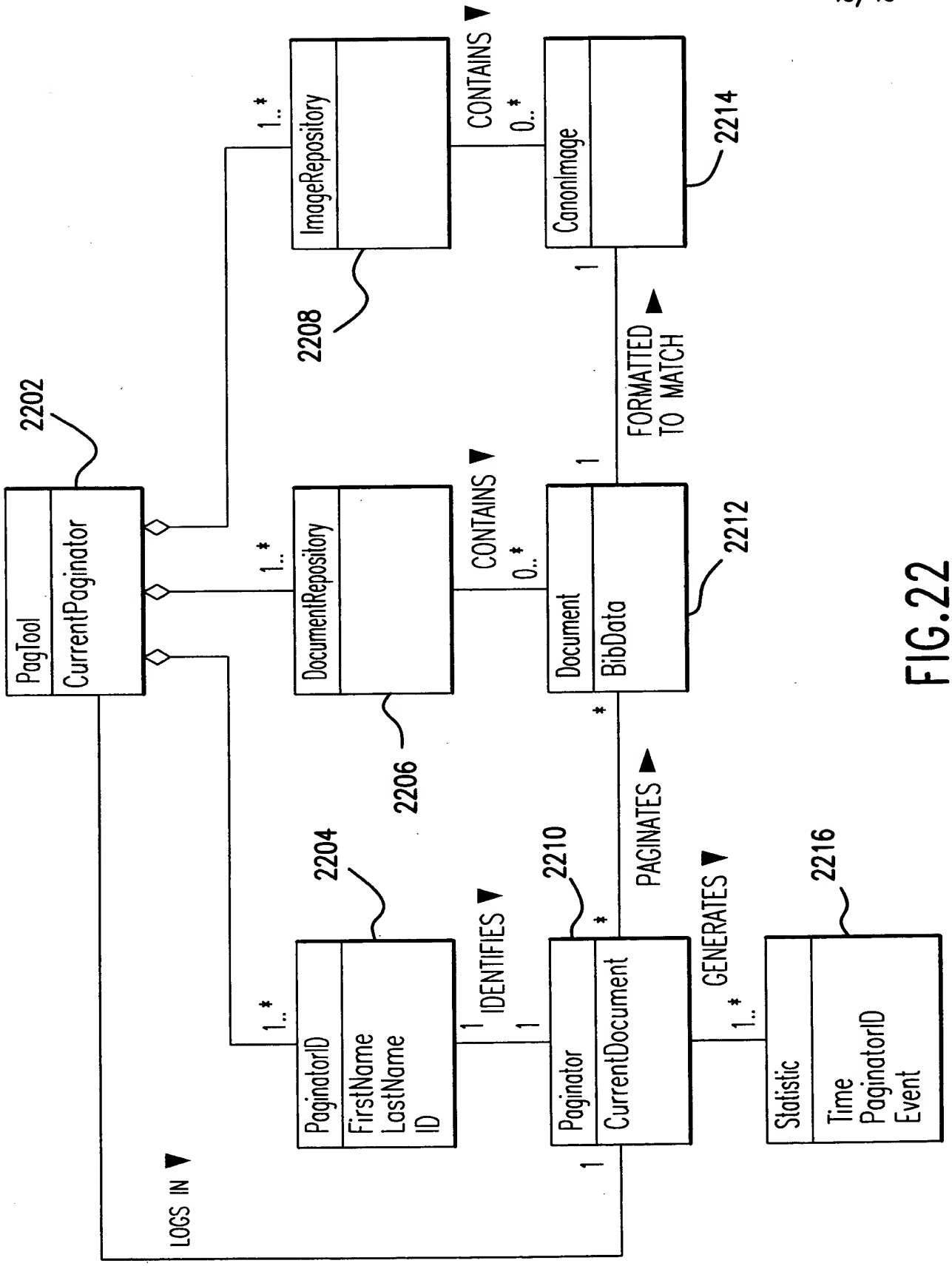
PagTool
CurrentPaginator
2202
ImageRepository
2208
CONTAINS
CanonImage
2214
FORMATTED TO MATCH
DocumentRepository
2206
CONTAINS
Document
BibData
2212
PAGINATES
PaginatorID
FirstName
LastName
ID
2204
IDENTIFIES
Paginator
CurrentDocument
2210
GENERATES
Statistic
Time
PaginatorID
Event
2216
LOGS IN
1..*
0..*
1
*

FIG.22